

**FEDERALLY ENFORCEABLE STATE
OPERATING PERMIT (FESOP) RENEWAL
OFFICE OF AIR QUALITY**

**Rieth-Riley Construction Co., Inc.
3425 O'Farrel Road
Lafayette, Indiana 47904**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-8 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: F 157-14146-03286	
Issued by: Original signed by Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: February 26, 2002 Expiration Date: February 26, 2007

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SECTION A

SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in Conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-8-3(b)]

The Permittee owns and operates a stationary hot batch-mix asphalt production source.

Authorized Individual:	Dean K. Logan
Source Address:	3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address:	P.O. Box 477, Goshen, Indiana 46527-0477
General Source Phone Number:	219 - 875 - 5183
SIC Code:	2951
County Location:	Tippecanoe
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Federally Enforceable State Operating Permit (FESOP) Minor Source, under PSD Rules; Minor Source, Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-8-3(c)(3)]

This stationary source consists of the following emission units and pollution control devices:

- (a) One (1) batch mixer, identified as 157-03310, equipped with a baghouse for PM control, exhausted to Stack SV1a, capacity: 225 tons of asphalt per hour.
- (b) One (1) dryer burner, firing re-refined oil as primary fuel, using natural gas, No.2 fuel oil, No.4 fuel oil, propane gas and butane gas as backup fuels, exhausting to Stack SV1a, rated at 75 million British thermal units per hour.
- (c) Two (2) hot oil heaters, firing natural gas, capacity: 1.7 million British thermal units per hour, total.
- (d) One (1) tank, identified as 10 (previously known as 20), constructed in 1995, capacity: 30,000 gallons of liquid asphalt.
- (e) One (1) tank, identified as 11, constructed in 1978, capacity: 20,000 gallons of liquid asphalt.
- (f) Two (2) tanks, identified as 16A and 16B, constructed in 1978 and 1970, respectively, capacity: 12,500 and 8,000 gallons of re-refined oil, respectively.
- (g) One (1) batch mixer, identified as 157-03286, equipped with a baghouse for PM control, exhausted to Stack SV1, capacity: 200 tons of asphalt per hour.
- (h) One (1) dryer burner, firing re-refined oil as primary fuel, using natural gas, No.2 fuel oil, No.4 fuel oil, propane gas and butane gas as backup fuels, exhausting to Stack SV1, rated at 82.4 million British thermal units per hour.

- (i) One (1) hot oil heater, firing propane, capacity: 0.8 million British thermal units per hour.
- (j) One (1) tank, identified as E (previously known as 15), constructed in 1986, capacity: 35,000 gallons of liquid asphalt.
- (k) One (1) tank, identified as J, constructed in 1980, capacity: 18,000 gallons of propane.
- (l) One (1) tank, identified as K, constructed in 1970, capacity: 20,000 gallons of re-refined oil.

A.3 Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-8-3(c)(3)(I)]

This stationary source also includes the following insignificant activities, as defined in 326 IAC 2-7-1(21):

- (a) Plant maintenance activities including grinding, sanding and welding. [326 IAC 6-3-2]
- (b) A laboratory as defined in 326 IAC 2-7-1(21)(D).

A.4 FESOP Applicability [326 IAC 2-8-2]

This stationary source, otherwise required to have a Part 70 permit as described in 326 IAC 2-7-2(a), has applied to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) to renew a Federally Enforceable State Operating Permit (FESOP).

A.5 Prior Permits Superseded [326 IAC 2-1.1-9.5]

- (a) All terms and conditions of previous permits issued pursuant to permitting programs approved into the state implementation plan have been either
 - (1) incorporated as originally stated,
 - (2) revised, or
 - (3) deletedby this permit.
- (b) All previous registrations and permits are superseded by this permit.

SECTION B

GENERAL CONDITIONS

B.1 Permit No Defense [IC 13]

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a FESOP under 326 IAC 2-8.

B.2 Definitions [326 IAC 2-8-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2, and 326 IAC 2-7) shall prevail.

B.3 Permit Term [326 IAC 2-8-4(2)]

This permit is issued for a fixed term of five (5) years from the original date, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date.

B.4 Enforceability [326 IAC 2-8-6]

(a) Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

B.5 Termination of Right to Operate [326 IAC 2-8-9] [326 IAC 2-8-3(h)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-8-3(h) and 326 IAC 2-8-9.

B.6 Severability [326 IAC 2-8-4(4)]

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

B.7 Property Rights or Exclusive Privilege [326 IAC 2-8-4(5)(D)]

This permit does not convey any property rights of any sort, or any exclusive privilege.

B.8 Duty to Supplement and Provide Information [326 IAC 2-8-3(f)] [326 IAC 2-8-4(5)(E)] [326 IAC 2-8-5(a)(4)]

(a) The Permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

The submittal by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

(b) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ, may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by the "authorized individual"

as defined by 326 IAC 2-1.1-1(1). Upon request, the Permittee shall also furnish to IDEM, OAQ, copies of records required to be kept by this permit or, for information claimed to be confidential, the Permittee may furnish such records directly to the U. S. EPA along with a claim of confidentiality.[326 IAC 2-8-4(5)(E)]

- (c) The Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.9 Compliance Order Issuance [326 IAC 2-8-5(b)]

IDEM, OAQ may issue a compliance order to this Permittee upon discovery that this permit is in nonconformance with an applicable requirement. The order may require immediate compliance or contain a schedule for expeditious compliance with the applicable requirement.

B.10 Compliance with Permit Conditions [326 IAC 2-8-4(5)(A)] [326 IAC 2-8-4(5)(B)]

- (a) The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for:
 - (1) Enforcement action;
 - (2) Permit termination, revocation and reissuance, or modification; and
 - (3) Denial of a permit renewal application.
- (b) It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (c) An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.

B.11 Certification [326 IAC 2-8-3(d)] [326 IAC 2-8-4(3)(C)(i)] [326 IAC 2-8-5(1)]

- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by an authorized individual of truth, accuracy, and completeness. This certification, shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification.
- (c) An authorized individual is defined at 326 IAC 2-1.1-1(1).

B.12 Annual Compliance Certification [326 IAC 2-8-5(a)(1)]

- (a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. All certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted in letter form no later than July 1 of each year to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

- (b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.
- (c) The annual compliance certification report shall include the following:
 - (1) The appropriate identification of each term or condition of this permit that is the basis of the certification;
 - (2) The compliance status;
 - (3) Whether compliance was continuous or intermittent;
 - (4) The methods used for determining the compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-8-4(3); and
 - (5) Such other facts as specified in Sections D of this permit, IDEM, OAQ, may require to determine the compliance status of the source.

The notification which shall be submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

B.13 Preventive Maintenance Plan [326 IAC 1-6-3] [326 IAC 2-8-4(9)] [326 IAC 2-8-5(a)(1)]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall maintain and implement Preventive Maintenance Plans (PMPs), including the following information on each facility:
 - (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
 - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
 - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.
- (b) The Permittee shall implement the PMPs as necessary to ensure that failure to implement a PMP does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) A copy of the PMPs shall be submitted to IDEM, OAQ, upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ, may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or contributes to any violation. The PMP does not require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (d) Records of preventive maintenance shall be retained for a period of at least five (5) years. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

B.14 Emergency Provisions [326 IAC 2-8-12]

- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation, except as provided in 326 IAC 2-8-12.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a health-based or technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describes the following:
 - (1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;
 - (2) The permitted facility was at the time being properly operated;
 - (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;
 - (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone No.: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section)
or,

Telephone No.: 317-233-5674 (ask for Compliance Section)
Facsimile No.: 317-233-5967

Failure to notify IDEM, OAQ, by telephone or facsimile within four (4) daytime business hours after the beginning of the emergency, or after the emergency is discovered or reasonably should have been discovered, shall constitute a violation of 326 IAC 2-8 and any other applicable rules. [326 IAC 2-8-12(f)]

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-8-4(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and
- (C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.
- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
- (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
- (e) IDEM, OAQ, may require that the Preventive Maintenance Plans required under 326 IAC 2-8-3(c)(6) be revised in response to an emergency.
- (f) Failure to notify IDEM, OAQ, by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-8 and any other applicable rules.
- (g) Operations may continue during an emergency only if the following conditions are met:
 - (1) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.
 - (2) If an emergency situation causes a deviation from a health-based limit, the Permittee may not continue to operate the affected emissions facilities unless:
 - (A) The Permittee immediately takes all reasonable steps to correct the emergency situation and to minimize emissions; and
 - (B) Continued operation of the facilities is necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw material of substantial economic value.

Any operations shall continue no longer than the minimum time required to prevent the situations identified in (g)(2)(B) of this condition.

B.15 Deviations from Permit Requirements and Conditions [326 IAC 2-8-4(3)(C)(ii)]

- (a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provision), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by the "responsible official" as defined by 326 IAC 2-1.1-1(1).

- (b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.
- (c) Emergencies shall be included in the Quarterly Deviation and Compliance Monitoring Report.

B.16 Permit Modification, Reopening, Revocation and Reissuance, or Termination [326 IAC 2-8-4(5)(C)] [326 IAC 2-8-7(a)] [326 IAC 2-8-8]

- (a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a FESOP modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-8-4(5)(C)] The notification by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ determines any of the following:
 - (1) That this permit contains a material mistake.
 - (2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.
 - (3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-8-8(a)]
- (c) Proceedings by IDEM, OAQ, to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-8-8(b)]
- (d) The reopening and revision of this permit, under 326 IAC 2-8-8(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ, at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ, may provide a shorter time period in the case of an emergency. [326 IAC 2-8-8(c)]

B.17 Permit Renewal [326 IAC 2-8-3(h)]

- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ, and shall include the information specified in 326 IAC 2-8-3. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40). The renewal application does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, IN 46206-6015

- (b) Timely Submittal of Permit Renewal [326 IAC 2-8-3]

- (1) A timely renewal application is one that is:

- (A) Submitted at least nine (9) months prior to the date of the expiration of this permit; and
- (B) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

- (2) If IDEM, OAQ, upon receiving a timely and complete permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect until the renewal permit has been issued or denied.

- (c) Right to Operate After Application for Renewal [326 IAC 2-8-9]

If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-8 until IDEM, OAQ, takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified in writing by IDEM, OAQ, any additional information identified as needed to process the application.

B.18 Permit Amendment or Revision [326 IAC 2-8-10] [326 IAC 2-8-11.1]

- (a) Permit amendments and revisions are governed by the requirements of 326 IAC 2-8-10 or 326 IAC 2-8-11.1 whenever the Permittee seeks to amend or modify this permit.

- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

Any such application should be certified by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) The Permittee may implement the administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-10(b)(3)]

B.19 Operational Flexibility [326 IAC 2-8-15]

- (a) The Permittee may make any change or changes at this source that are described in 326 IAC 2-8-15(b) through (d), without prior permit revision, if each of the following conditions is met:

- (1) The changes are not modifications under any provision of Title I of the Clean Air Act;
- (2) Any approval required by 326 IAC 2-8-11.1 has been obtained;
- (3) The changes do not result in emissions which exceed the emissions allowable under this permit (whether expressed herein as a rate of emissions or in terms of total emissions);
- (4) The Permittee notifies the:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

- (5) The Permittee maintains records on-site which document, on a rolling five (5) year basis, all such changes and emissions trading that are subject to 326 IAC 2-8-15(b) through (d) and makes such records available, upon reasonable request, to public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ, in the notices specified in 326 IAC 2-8-15(b), (c)(1), and (d).

- (b) The Permittee may make Section 502(b)(10) of the Clean Air Act changes (this term is defined at 326 IAC 2-7-1(36)) without a permit revision, subject to the constraint of 326 IAC 2-8-15(a) and the following additional conditions:

- (1) A brief description of the change within the source;
- (2) The date on which the change will occur;
- (3) Any change in emissions; and

- (4) Any permit term or condition that is no longer applicable as a result of the change.

The notification which shall be submitted by the Permittee does not require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1.

- (c) Emission Trades [326 IAC 2-8-15(c)]
The Permittee may trade increases and decreases in emissions in the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-8-15(c).
- (d) Alternative Operating Scenarios [326 IAC 2-8-15(d)]
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-8-4(7). No prior notification of IDEM, OAQ or U.S. EPA is required.

B.20 Permit Revision Requirement [326 IAC 2-8-11.1]

A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2 and 326 IAC 2-8-11.1.

B.21 Inspection and Entry [326 IAC 2-8-5(a)(2)] [IC 13-14-2-2]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a FESOP source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- (d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) Utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.22 Transfer of Ownership or Operational Control [326 IAC 2-8-10]

- (a) The Permittee must comply with the requirements of 326 IAC 2-8-10 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.
- (b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015

Indianapolis, Indiana 46206-6015

The application which shall be submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-8-11(b)(3)]

B.23 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-8-4(6)] [326 IAC 2-8-16]

- (a) The Permittee shall pay annual fees to IDEM, OAQ, within thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ the applicable fee is due April 1 of each year.
- (b) Failure to pay may result in administrative enforcement action, or revocation of this permit.
- (c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-0425 (ask for OAQ, Technical Support and Modeling Section), to determine the appropriate permit fee.

SECTION C

SOURCE OPERATION CONDITIONS

Entire Source

Emissions Limitations and Standards [326 IAC 2-8-4(1)]

C.1 Overall Source Limit [326 IAC 2-8]

The purpose of this permit is to limit this source's potential to emit to less than major source levels for the purpose of Section 502(a) of the Clean Air Act.

(a) Pursuant to 326 IAC 2-8:

- (1) The potential to emit any regulated pollutant, except particulate matter (PM), from the entire source shall be limited to less than one-hundred (100) tons per twelve (12) consecutive month period. This limitation shall also satisfy the requirements of 326 IAC 2-3 (Emission Offset);
- (2) The potential to emit any individual hazardous air pollutant (HAP) from the entire source shall be limited to less than ten (10) tons per twelve (12) consecutive month period; and
- (3) The potential to emit any combination of HAPs from the entire source shall be limited to less than twenty-five (25) tons per twelve (12) consecutive month period.

(b) Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration (PSD)), potential to emit particulate matter (PM) from the entire source shall be limited to less than two hundred fifty (250) tons per twelve (12) consecutive month period.

(c) This condition shall include all emission points at this source including those that are insignificant as defined in 326 IAC 2-7-1(21). The source shall be allowed to add insignificant activities not already listed in this permit, provided the source's potential to emit does not exceed the above specified limits.

(d) Section D of this permit contains independently enforceable provisions to satisfy this requirement.

C.2 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2(3)]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and in 326 IAC 9-1-2.

C.5 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

C.6 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter emissions shall be controlled according to the plan submitted on March 14, 1996. The plan consists of:

- (a) checking fugitive dust enclosures and duct work on a daily basis during production for abnormal emissions and correcting abnormal emissions that same day; and
- (b) wet suppression of dust from unpaved roads, storage piles, and transfer points on an as needed basis.

C.7 Operation of Equipment [326 IAC 2-8-5(a)(4)]

Except as otherwise provided by statute, rule or in this permit, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation.

C.8 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted.

C.9 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
 - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
 - (2) If there is a change in the following:
 - (A) Asbestos removal or demolition start date;
 - (B) Removal or demolition contractor; or
 - (C) Waste disposal site.

- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (e) Procedures for Asbestos Emission Control
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-4 emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) Indiana Accredited Asbestos Inspector
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement that the inspector be accredited is federally enforceable.

Testing Requirements [326 IAC 2-8-4(3)]

C.10 Performance Testing [326 IAC 3-6]

- (a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ, not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, if the source submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.11 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

C.12 Compliance Monitoring [326 IAC 2-8-4(3)] [326 IAC 2-8-5(a)(1)]

Unless otherwise specified in this permit, all monitoring and record keeping requirements not already legally required shall be implemented upon issuance of this permit. If required by Section D, the Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment.

Unless otherwise specified in the approval for the new emissions unit, compliance monitoring for new emission units or emission units added through a permit revision shall be implemented when operation begins.

C.13 Maintenance of Emission Monitoring Equipment [326 IAC 2-8-4(3)(A)(iii)]

- (a) In the event that a breakdown of the emission monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no often less than once an hour until such time as the continuous monitor is back in operation.
- (b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

C.14 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

Any monitoring or testing performed required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60 Appendix B, 40 CFR 63 or other approved methods as specified in this permit.

C.15 Pressure Gauge and Other Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-8-4(3)] [326 IAC 2-8-5(1)]

- (a) Whenever a condition in this permit requires the measurement of pressure drop across any part of the unit or its control device, the gauge employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ($\pm 2\%$) of full scale reading.

- (b) Whenever a condition in this permit requires the measurement of a temperature, flow rate, or pH level, the instrument employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ($\pm 2\%$) of full scale reading.
- (c) The Permittee may request the IDEM, OAQ approve the use of a pressure gauge or other instrument that does not meet the above specifications provided the Permittee can demonstrate an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of pressure drop or other parameters.

Corrective Actions and Response Steps [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

C.16 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.
- (b) These ERPs shall be submitted for approval to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within ninety (90) days from the date of issuance of this permit.

The ERP does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) If the ERP is disapproved by IDEM, OAQ, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP.
- (d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.
- (e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.
- (f) Upon direct notification by IDEM, OAQ, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level. [326 IAC 1-5-3]

C.17 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68.215]

If a regulated substance, subject to 40 CFR 68, is present at a source in more than a threshold quantity, 40 CFR 68 is an applicable requirement and the Permittee shall submit:

- (a) A compliance schedule for meeting the requirements of 40 CFR 68; or
- (b) As a part of the annual compliance certification submitted under 326 IAC 2-7-6(5), a certification statement that the source is in compliance with all the requirements of 40 CFR

68, including the registration and submission of a Risk Management Plan (RMP).

All documents submitted pursuant to this condition shall include the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

C.18 Compliance Response Plan - Preparation, Implementation, Records, and Reports [326 IAC 2-8-4]
[326 IAC 2-8-5]

- (a) The Permittee is required to prepare a Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. A CRP shall be submitted to IDEM, OAQ upon request. The CRP shall be prepared within ninety (90) days after issuance of this permit by the Permittee, supplemented from time to time by the Permittee, maintained on site, and comprised of:
 - (1) Reasonable response steps that may be implemented in the event that a response step is needed pursuant to the requirements of Section D of this permit; and an expected time frame for taking reasonable response steps.
 - (2) If, at any time, the Permittee takes reasonable response steps that are not set forth in the Permittee's current Compliance Response Plan and the Permittee documents such response in accordance with subsection (e) below, the Permittee shall amend its Compliance Response Plan to include such response steps taken.
- (b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition as follows:
 - (1) Reasonable response steps shall be taken as set forth in the Permittee's current Compliance Response Plan; or
 - (2) If none of the reasonable response steps listed in the Compliance Response Plan is applicable or responsive to the excursion, the Permittee shall devise and implement additional response steps as expeditiously as practical. Taking such additional response steps shall not be considered a deviation from this permit so long as the Permittee documents such response steps in accordance with this condition.
 - (3) If the Permittee determines that additional response steps would necessitate that the emissions unit or control device be shut down, the IDEM, OAQ shall be promptly notified of the expected date of the shut down, the status of the applicable compliance monitoring parameter with respect to normal, and the results of the actions taken up to the time of notification.
 - (4) Failure to take reasonable response steps shall constitute a violation of the permit.
- (c) The Permittee is not required to take any further response steps for any of the following reasons:
 - (1) A false reading occurs due to the malfunction of the monitoring equipment and prompt action was taken to correct the monitoring equipment.
 - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied.

- (3) An automatic measurement was taken when the process was not operating.
- (4) The process has already returned or is returning to operating within "normal" parameters and no response steps are required.
- (d) When implementing reasonable steps in response to a compliance monitoring condition, if the Permittee determines that an exceedance of an emission limitation has occurred, the Permittee shall report such deviations pursuant to Section B-Deviations from Permit Requirements and Conditions.
- (e) The Permittee shall record all instances when response steps are taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.
- (f) Except as otherwise provided by a rule or provided specifically in Section D, all monitoring as required in Section D shall be performed when the emission unit is operating, except for time necessary to perform quality assurance and maintenance activities.

C.19 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-8-4] [326 IAC 2-8-5]

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The documents submitted pursuant to this condition does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

C.20 General Record Keeping Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-5]

- (a) Records of all required data, reports and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

C.21 General Reporting Requirements [326 IAC 2-8-4(3)(C)] [326 IAC 2-1.1-11]

- (a) The source shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This

report shall be submitted within thirty (30) days of the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include the certification by the "authorized individual" as defined by 326 IAC2-1.1-1(1).

- (b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.
- (d) Unless otherwise specified in this permit, any quarterly report required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. The reports do require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (e) Reporting periods are based on calendar years.

Stratospheric Ozone Protection

C.22 Compliance with 40 CFR 82 and 326 IAC 22-1

Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with the standards for recycling and emissions reduction:

- (a) Persons opening appliances for maintenance, service, repair or disposal must comply with the required practices pursuant to 40 CFR 82.156
- (b) Equipment used during the maintenance, service, repair or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.
- (c) Persons performing maintenance, service, repair or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

SECTION D.1

FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-8-4(10)]:

- (a) One (1) batch mixer, identified as 157-03310, equipped with a baghouse for PM control, exhausted to Stack SV1a, capacity: 225 tons of asphalt per hour.
- (b) One (1) dryer burner, firing re-refined oil as primary fuel, using natural gas, No.2 fuel oil, No.4 fuel oil, propane gas and butane gas as backup fuels, exhausting to Stack SV1a, rated at 75 million British thermal units per hour.
- (c) Two (2) hot oil heaters, firing natural gas, capacity: 1.7 million British thermal units per hour, total.
- (d) One (1) tank, identified as 10 (previously known as 20), constructed in 1995, capacity: 30,000 gallons of liquid asphalt.
- (e) One (1) tank, identified as 11, constructed in 1978, capacity: 20,000 gallons of liquid asphalt.
- (f) Two (2) tanks, identified as 16A and 16B, constructed in 1978 and 1970, respectively, capacity: 12,500 and 8,000 gallons of re-refined oil, respectively.
- (g) One (1) batch mixer, identified as 157-03286, equipped with a baghouse for PM control, exhausted to Stack SV1, capacity: 200 tons of asphalt per hour.
- (h) One (1) dryer burner, firing re-refined oil as primary fuel, using natural gas, No.2 fuel oil, No.4 fuel oil, propane gas and butane gas as backup fuels, exhausting to Stack SV1, rated at 82.4 million British thermal units per hour.
- (i) One (1) hot oil heater, firing propane, capacity: 0.8 million British thermal units per hour.
- (j) One (1) tank, identified as E (previously known as 15), constructed in 1986, capacity: 35,000 gallons of liquid asphalt.
- (k) One (1) tank, identified as J, constructed in 1980, capacity: 18,000 gallons of propane.
- (l) One (1) tank, identified as K, constructed in 1970, capacity: 20,000 gallons of re-refined oil.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-8-4(1)]

D.1.1 General Provisions Relating to NSPS [326 IAC 12-1] [40 CFR 60, Subpart A]

The provisions of 40 CFR 60 Subpart A - General Provisions, which are incorporated as 326 IAC 12-1, apply to the facility described in this section except when otherwise specified in 40 CFR 60 Subpart I.

D.1.2 Particulate Matter 10 Microns (PM₁₀) [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4, emissions of particulate matter 10 microns or less in diameter (PM₁₀) from each aggregate dryer/mixer (157-03310 and 157-03286) shall not exceed 8.78 pounds per hour, equivalent to 38.5 tons per year from each aggregate dryer/mixer.

D.1.3 Particulate Matter (PM) [326 IAC 12] [40 CFR 60.90]

Pursuant to the New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.90, Subpart I), no owner or operator subject to the provisions of Subpart I shall discharge into the atmosphere from any affected facility any gases which:

- (a) contain particulate matter in excess of 0.04 grains per dry standard cubic foot, equivalent to 15.25 pounds per hour at a flow rate of 65,190 acfm and a temperature of 275 degrees Fahrenheit (Plant 157-03310), and equivalent to 8.49 pounds per hour at a flow rate of 36,290 acfm and a temperature of 275 degrees Fahrenheit (Plant 157-03286);
- (b) exhibit 20 percent opacity, or greater.

D.1.4 Sulfur Dioxide (SO₂) [326 IAC 2-8-4] [326 IAC 7-1.1-1] [326 IAC 7-2-1]

- (a) Pursuant to 326 IAC 2-8-4, the input of re-refined oil to the dryer/burner at Plant 157-03310 shall be limited to less than 799,200 gallons per twelve (12) consecutive month period, and the input of re-refined oil to the dryer/burner at Plant 157-03286 shall be limited to less than 532,800 gallons per twelve (12) consecutive month period, which is equivalent to SO₂ emissions of less than 99.9 tons per year.
- (b) Pursuant to 326 IAC 7-1.1-2, the sulfur content of the re-refined oil shall not exceed one percent (1.0%) by weight. Pursuant to 326 IAC 7-2-1, compliance shall be demonstrated on a thirty (30) day rolling weighted average.
- (c) For purposes of determining compliance based on SO₂ emissions, each gallon of No.2 distillate oil shall be equivalent to 0.4733 gallons of re-refined oil, each gallon of No.4 distillate oil shall be equivalent to 0.500 gallons of re-refined oil, each gallon of propane shall be equivalent to 0.000133 gallons of re-refined oil, each gallon of butane shall be equivalent to 0.000133 gallons of re-refined oil, and each million cubic feet of natural gas shall be equivalent to 4.00 gallons of re-refined oil.
- (d) Pursuant to 326 IAC 7-1.1-2, the sulfur content of the No.2 and No.4 distillate oils shall not exceed five tenth percent (0.5%) by weight. Pursuant to 326 IAC 7-2-1, compliance shall be demonstrated on a thirty (30) day rolling weighted average.

D.1.5 Nitrogen Oxides (NO_x) [326 IAC 2-8-4]

- (a) Pursuant to 326 IAC 2-8-4, the input of propane to the dryer/burner at Plant 157-03310 shall be limited to less than 622,105 gallons per twelve (12) consecutive month period, and the input of propane to the dryer/burner at Plant 157-03286 shall be limited to less than 414,736 gallons per twelve (12) consecutive month period, which is equivalent to NO_x emissions of less than 98.5 tons per year.
- (b) For purposes of determining compliance based on NO_x emissions, each gallon of No.2 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of No.4 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of butane shall be equivalent to 1.105 gallons of propane, each gallon of re-refined oil shall be equivalent to 0.8421 gallons of propane, and each million cubic feet of natural gas shall be equivalent to 10,000 gallons of propane.

D.1.6 Volatile Organic Compounds (VOC) [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4, liquid binder used in the production of cold mix cutback asphalt shall be limited to less than 7,242 tons of liquid binder per twelve (12) consecutive month period, and the monthly average diluent content shall not exceed 8.0% percent. This is equivalent to VOC emissions of less than 95.0 tons per year.

D.1.7 Volatile Organic Compounds (VOC) [326 IAC 8-5-2]

Pursuant to 326 IAC 8-5-2 (Miscellaneous Operations: asphalt paving), the owner or operator shall: not cause or allow the use of asphalt emulsion containing more than seven (7.0) percent oil distillate by volume of emulsion for any paving application except the following purposes:

- (a) penetrating prime coating
- (b) stockpile storage
- (c) application during the months of November, December, January, February and March

D.1.8 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for each batch mixer/dryer burner (157-03310 and 157-03286) and any control devices.

D.1.9 Nonapplicability

- (a) The requirements from F 157-5448, issued December 11, 1996, Conditions D.1.4 and D.2.3 to limit input of re-refined oil to the aggregate dryer/burners have not been included in the renewal. A new SO₂ limit for the dryer/burners based on re-refined oil was calculated using the latest AP-42 emission factors. The limits have been included in this renewal as Condition D.1.4.
- (b) The requirements from F 157-5448, issued December 11, 1996, Conditions D.1.2 and D.2.2 to limit PM₁₀ emissions from each aggregate dryer/burner to 9.17 pounds per hour have not been included in the renewal. PM₁₀ emissions from each aggregate dryer/burner are now limited to less than 8.78 pounds per hour. This limit is contained in Condition D.1.2.
- (c) The requirement from F 157-5448, issued December 11, 1996, Condition D.1.3 to limit VOC emissions from cutback asphalt production to less than 95.16 tons per year has not been included in the renewal. VOC emissions from cutback asphalt production are now limited to less than 95.0 tons per year. This limit is contained in Condition D.1.6.

Thus, Conditions D.1.2, D.1.3, D.1.4, D.2.2, and D.2.3 of F 157-5448 are hereby rescinded.

Compliance Determination Requirements

D.1.10 Testing Requirements [326 IAC 2-8-5(1), (4)] [326 IAC 2-1.1-11]

- (a) Pursuant to FESOP 157-5448-03286, as revised by SPR 157-13666-03286, and pursuant to 40 CFR 60, Subpart I, an initial performance test is required for the aggregate dryer/burner identified as Plant 157-03310 (Stack SV1a) within 60 days after achieving the maximum production rate at which the aggregate dryer will be operated using re-refined oil, but not later than 180 days after initial startup using re-refined oil. The test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. PM₁₀ includes filterable and condensable PM₁₀. Testing shall be conducted in accordance with Section C- Performance Testing.
- (b) Pursuant to FESOP 157-5448-03286, as revised by SPR 157-12074-03286, and pursuant to 40 CFR 60, Subpart I, an initial performance test is required for the aggregate dryer/burner identified as Plant 157-03286 (Stack SV1) during the period between January 17, 2003 and July 17, 2003 (between 30 and 36 months after the July 17, 2001 issuance date of SPR 157-12074-03286). The Permittee shall perform PM and PM₁₀ testing utilizing methods approved by the Commissioner. The test shall be repeated at least once every

five (5) years from the date of this valid compliance demonstration. PM_{10} includes filterable and condensable PM_{10} . Testing shall be conducted in accordance with Section C-Performance Testing.

D.1.11 VOC Emissions

Compliance with Condition D.1.6 shall be demonstrated within 30 days of the end of each month based on the liquid binder usage for the twelve (12) consecutive month period.

D.1.12 Sulfur Dioxide Emissions and Sulfur Content

Compliance shall be determined utilizing one of the following options.

- (a) Pursuant to 326 IAC 3-7-4, the Permittee shall demonstrate that the sulfur dioxide emissions do not exceed five-tenths (0.5) pounds per million British thermal units heat input by:
 - (1) Providing vendor analysis of fuel delivered, if accompanied by a vendor certification; or
 - (2) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.
 - (A) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and
 - (B) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling.
- (b) Compliance may also be determined by conducting a stack test for sulfur dioxide emissions from the 75 million British thermal units per hour burner, and the 82.4 million British thermal units per hour burner, using 40 CFR 60, Appendix A, Method 6 in accordance with the procedures in 326 IAC 3-6.

A determination of noncompliance pursuant to any of the methods specified in (a) or (b) above shall not be refuted by evidence of compliance pursuant to the other method.

D.1.13 Used Oil Requirements

The re-refined oil burned in the aggregate dryer shall comply with the used oil requirements specified in 329 IAC 13 (Used Oil Management). Pursuant to 329 IAC 13-3-2 (Used Oil Specifications), used oil burned for energy recovery that is classified as off-specification used oil fuel shall comply with the provisions of 329 IAC 13-8 (Used Oil Burners Who Burn Off-specification Used Oil For Energy Recovery), including:

- (a) Receipt of an EPA identification number as outlined in 329 IAC 13-8-3 (Notification),
- (b) Compliance with the used oil storage requirements specified in 329 IAC 13-8-5 (Used Oil Storage), and
- (c) Maintaining records pursuant to 329 IAC 13-8-6 (Tracking).

The burning of mixtures of used oil and hazardous waste that is regulated under 329 IAC 3.1 is prohibited at this source.

D.1.14 Particulate Matter (PM)

In order to comply with Conditions D.1.2 and D.1.3, the baghouse for PM and PM_{10} control shall be in operation and control emissions from each batch mixer/dryer at all times that either batch

mixer/dryer is in operation and exhausting to the outside atmosphere.

Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

D.1.15 Visible Emissions Notations

- (a) Visible emission notations of the conveyers, material transfer points, aggregate storage piles, unpaved roads, and each batch mixer/burner stack exhaust (SV1 and SV1a) shall be performed once per shift during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

D.1.16 Parametric Monitoring

- (a) The Permittee shall record the total static pressure drop across the baghouse used in conjunction with the mixer/dryer (157-03310), at least once per shift when the drying/mixing process is in operation when venting to the atmosphere. When for any one reading, the pressure drop across the baghouse is outside the normal range of 2.0 and 8.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Compliance Response Plan - Preparation, Implementation, Records, and Reports. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

- (b) The inlet temperature to the baghouse (157-03310) shall be maintained within a range of 200-400 degrees Fahrenheit to prevent overheating of the bags and to prevent low temperatures from mudding up the bags. The operational parameters shall be monitored for indications of bag failure. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the inlet temperature reading is outside of the above mentioned range for any one reading. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.
- (c) The Permittee shall record the total static pressure drop across the baghouse used in conjunction with the mixer/dryer (157-03286), at least once per shift when the drying/mixing

process is in operation when venting to the atmosphere. When for any one reading, the pressure drop across the baghouse is outside the normal range of 7.0 and 13.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Compliance Response Plan - Preparation, Implementation, Records, and Reports. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

- (d) The inlet temperature to the baghouse (157-03286) shall be maintained within a range of 200-400 degrees Fahrenheit to prevent overheating of the bags and to prevent low temperatures from mudding up the bags. The operational parameters shall be monitored for indications of bag failure. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the inlet temperature reading is outside of the above mentioned range for any one reading. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.

D.1.17 Baghouse Inspections

An inspection shall be performed each calendar quarter of all bags controlling each dryer/burner operation when venting to the atmosphere. A baghouse inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting indoors. All defective bags shall be replaced.

D.1.18 Broken or Failed Bag Detection

In the event that bag failure has been observed:

- (a) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if there are no visible emissions or if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this permit (Section B - Emergency Provisions). Within eight (8) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance Response Plan - Preparation, Implementation, Records, and Reports, shall be considered a violation of this permit.
- (b) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

D.1.19 Record Keeping Requirements

- (a) To document compliance with Conditions D.1.4 and D.1.5, the Permittee shall maintain records in accordance with (1) through (6) below. Records maintained for (1) through (6) shall be taken monthly and shall be complete and sufficient to establish compliance with the SO₂ and NO_x emission limits established in Conditions D.1.4 and D.1.5.

- (1) Calendar dates covered in the compliance determination period;
- (2) Actual fuel usage of each fuel used since last compliance determination period and equivalent sulfur dioxide and nitrogen oxide emissions;
- (3) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and

If the fuel supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:

- (4) Fuel supplier certifications;
- (5) The name of the fuel supplier; and
- (6) A statement from the fuel supplier that certifies the sulfur content of the fuel oil.

- (b) To document compliance with Condition D.1.6, the Permittee shall maintain monthly records at the source of the following values:

- (1) Amount of liquid binder used in the production of cold mix cutback asphalt; and
- (2) Average diluent content of the liquid binder.

- (c) To document compliance with Condition D.1.15, the Permittee shall maintain records of visible emission notations of each batch mixer/burner stack exhaust (SV1 and SV1a) once per shift.

- (d) To document compliance with Condition D.1.16, the Permittee shall maintain records of the following operational parameters during normal operation when venting to the atmosphere:

Inlet and outlet differential static pressure once per shift.

- (e) To document compliance with Condition D.1.17, the Permittee shall maintain records of the results of the inspections required under Condition D.1.17.

- (f) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.20 Record Keeping [326 IAC 12] [40 CFR 60.110b, Subpart Kb]

The one (1) tank, identified as 10, with a capacity of 30,000 gallons, and the one (1) tank, identified as E, with a capacity of 35,000 gallons, shall comply with the New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.110b, Subpart Kb). These tanks are subject to only 40 CFR Part 60.116b, paragraphs (a) and (b) which requires the Permittee to maintain accessible records showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel. Records shall be kept for the life of the storage tanks.

D.1.21 Reporting Requirements

A quarterly summary of the information to document compliance with Conditions D.1.4, D.1.5 and D.1.6 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

SECTION D.2

FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-8-4(10)]: Insignificant Activities

Plant maintenance activities including grinding, sanding and welding. [326 IAC 6-3-2]

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-8-4(1)]

D.2.1 Particulate Matter (PM) [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Process Operations), the PM emission rate from the insignificant plant maintenance activities shall not exceed the allowable PM emission rate based on the following equation:

Interpolation of the data for the process weight rate up to 60,000 pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67}$$

where E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
CERTIFICATION**

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286

This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this permit.

Please check what document is being certified:

- 9 Annual Compliance Certification Letter
- 9 Test Result (specify) _____
- 9 Report (specify) _____
- 9 Notification (specify) _____
- 9 Affidavit (specify) _____
- 9 Other (specify) _____

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH
P.O. Box 6015
100 North Senate Avenue
Indianapolis, Indiana 46206-6015
Phone: 317-233-5674
Fax: 317-233-5967**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
EMERGENCY OCCURRENCE REPORT**

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286

This form consists of 2 pages

Page 1 of 2

9 This is an emergency as defined in 326 IAC 2-7-1(12)
CThe Permittee must notify the Office of Air Quality (OAQ), within four (4) business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section); and
CThe Permittee must submit notice in writing or by facsimile within two (2) days (Facsimile Number: 317-233-5967), and follow the other requirements of 326 IAC 2-7-16

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:

Control Equipment:

Permit Condition or Operation Limitation in Permit:

Description of the Emergency:

Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A

Page 2 of 2

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency? Y N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO ₂ , VOC, NO _x , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed by: _____

Title / Position: _____

Date: _____

Phone: _____

A certification is not required for this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

FESOP Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286
Facility: Aggregate dryer/burner (Plant 157-03286)
Parameter: Gallons of re-refined oil burned in the aggregate dryer (SO₂)
Limit: 532,800 gallons of re-refined oil per 12 consecutive month period, where each gallon of No.2 distillate oil shall be equivalent to 0.4733 gallons of re-refined oil, each gallon of No.4 distillate oil shall be equivalent to 0.500 gallons of re-refined oil, each gallon of propane shall be equivalent to 0.000133 gallons of re-refined oil, each gallon of butane shall be equivalent to 0.000133 gallons of re-refined oil, and each million cubic feet of natural gas shall be equivalent to 4.00 gallons of re-refined oil.

YEAR: _____

Month	Gallons of re-refined oil or equivalent burned	Gallons of re-refined oil or equivalent burned	Gallons of re-refined oil or equivalent burned
	This Month	Previous 11 Months	12 Month Total

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

FESOP Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286
Facility: Aggregate dryer/burner (Plant 157-03310)
Parameter: Gallons of re-refined oil burned in the aggregate dryer (SO₂)
Limit: 799,200 gallons of re-refined oil per 12 consecutive month period, where each gallon of No.2 distillate oil shall be equivalent to 0.4733 gallons of re-refined oil, each gallon of No.4 distillate oil shall be equivalent to 0.500 gallons of re-refined oil, each gallon of propane shall be equivalent to 0.000133 gallons of re-refined oil, each gallon of butane shall be equivalent to 0.000133 gallons of re-refined oil, and each million cubic feet of natural gas shall be equivalent to 4.00 gallons of re-refined oil.

YEAR: _____

Month	Gallons of re-refined oil or equivalent burned	Gallons of re-refined oil or equivalent burned	Gallons of re-refined oil or equivalent burned
	This Month	Previous 11 Months	12 Month Total

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

FESOP Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286
Facility: Aggregate dryer/burner (Plant 157-03286)
Parameter: Gallons of propane burned in the aggregate dryer (NO_x)
Limit: 414,736 gallons of propane per 12 consecutive month period, where each gallon of No.2 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of No.4 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of butane shall be equivalent to 1.105 gallons of propane, each gallon of re-refined oil shall be equivalent to 0.8421 gallons of propane, and each million cubic feet of natural gas shall be equivalent to 10,000 gallons of propane.

YEAR: _____

Month	Gallons of propane or equivalent burned	Gallons of propane or equivalent burned	Gallons of propane or equivalent burned
	This Month	Previous 11 Months	12 Month Total

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

FESOP Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286
Facility: Aggregate dryer/burner (Plant 157-03310)
Parameter: Gallons of propane burned in the aggregate dryer (NOx)
Limit: 622,105 gallons of propane per 12 consecutive month period, where each gallon of No.2 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of No.4 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of butane shall be equivalent to 1.105 gallons of propane, each gallon of re-refined oil shall be equivalent to 0.8421 gallons of propane, and each million cubic feet of natural gas shall be equivalent to 10,000 gallons of propane.

YEAR: _____

Month	Gallons of propane or equivalent burned	Gallons of propane or equivalent burned	Gallons of propane or equivalent burned
	This Month	Previous 11 Months	12 Month Total

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

FESOP Quarterly Report

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286
Facility: Cutback asphalt production
Parameter: Amount of liquid binder used in the production of cutback asphalt (VOC)
Limit: 7,242 tons of liquid binder used in the production of cutback asphalt per twelve (12) consecutive month period, equivalent to VOC emissions less than 95.0 tons per year, with an average diluent content not to exceed 8.0%.

YEAR: _____

Month	Liquid binder used (tons)	Liquid binder used (tons)	Liquid binder used (tons)
	This Month	Previous 11 Months	12 Month Total

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____

Title / Position: _____

Signature: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

**FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP)
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT**

Source Name: Rieth-Riley Construction Co., Inc.
Source Address: 3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address: P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.: 157-14146-03286

Months: _____ **to** _____ **Year:** _____

Page 1 of 2

This report is an affirmation that the source has met all the requirements stated in this permit. This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. Deviations that are required to be reported by an applicable requirement shall be reported according to the schedule stated in the applicable requirement and do not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".	
9 NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.	
9 THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Page 2 of 2

Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Form Completed By: _____

Title/Position: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

February 26, 2002

**Indiana Department of Environmental Management
Office of Air Quality**

**Addendum to the
Technical Support Document for Federally Enforceable State Operating Permit
(FESOP) Renewal**

Source Background and Description

Source Name:	Rieth-Riley Construction Co., Inc.
Source Location:	3425 O'Farrel Road, Lafayette, Indiana 47904
County:	Tippecanoe
SIC Code:	2951
Operation Permit No.:	F 157-14146-03286
Permit Reviewer:	Edward A. Longenberger

On November 7, 2001, the Office of Air Quality (OAQ) had a notice published in the Journal and Courier, Lafayette, Indiana, stating that Rieth-Riley Construction Co., Inc. had applied for a Federally Enforceable State Operating Permit (FESOP) Renewal to operate a stationary hot mix asphalt plant with a baghouse as control. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On November 30, 2001, Dean Logan of Rieth-Riley submitted a comment on the proposed FESOP Renewal. The summary of the comment is as follows:

Comment 1:

In the limit part just below the parameter part (on the Quarterly Report Form for cutback asphalt production) there is a 5.1% average monthly limit. Since we typically only make cold mix one month out of the year and if the percent of diluent was higher than 5.1%, then the monthly average would be over the limit, even though the amount of diluent used is well below the yearly limit. Maybe it needs to be changed to the yearly average where the amount would be divided by 12.

Response 1:

The purpose of the liquid binder usage limit in Condition D.1.6 is to limit VOC emissions from the production of cold mix cutback asphalt to less than 95.0 tons per year. The amount of VOC emissions from this type of process is dependent upon the amount of diluent present in the liquid binder. Since Rieth-Riley has indicated that the amount of diluent in the liquid binder is 8.0%, rather than 5.1%, the liquid binder usage limit in Condition D.1.6 is changed as shown:

D.1.6 Volatile Organic Compounds (VOC) [326 IAC 2-8-4]

Pursuant to 326 IAC 2-8-4, liquid binder used in the production of cold mix cutback asphalt shall be limited to less than ~~11,494~~ **7,242** tons of liquid binder per twelve (12) consecutive month period, and the monthly average diluent content shall not exceed ~~5.1~~ **8.0** % percent. This is equivalent to VOC emissions of less than 95.0 tons per year.

This change also results in the following change to the Quarterly Report Form:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

FESOP Quarterly Report

Source Name:	Rieth-Riley Construction Co., Inc.
Source Address:	3425 O'Farrel Road, Lafayette, Indiana 47904
Mailing Address:	P.O. Box 477, Goshen, Indiana 46527-0477
FESOP No.:	157-14146-03286
Facility:	Cutback asphalt production
Parameter:	Amount of liquid binder used in the production of cutback asphalt (VOC)
Limit:	11,494 7,242 tons of liquid binder used in the production of cutback asphalt per twelve (12) consecutive month period, equivalent to VOC emissions less than 95.0 tons per year, with a monthly average diluent content not to exceed 5.4 8.0 %.

On November 14, 2001, IDEM received the following anonymous comment, presumably from an irate resident of Lafayette:

Comment 2:

You know, very well, you have no intention of helping us. We were here long before Rieth-Riley. You're just jumping through the 'hoops' with us. Even one of your IDEM employees lost his wife to cancer (left him with four (4) little kids). Our State Senator's wife suffering the same. We all live in the same subdivision! We've been here forty (40) years (Rieth-Riley 1½ years). The air quality is intolerable. Surely, IDEM must be getting a kickback.

Since Frank O'Bannon is leaving his home on Meridian Street, why not put Rieth-Riley there? The neighbors would love it!

P.S. Quit using taxpayer money on stamps sending these letters that are meaningless.

Response 2:

IDEM, OAQ appreciates your concerns. This proposed FESOP Renewal is intended to ensure that Rieth-Riley is operating in accordance with all applicable state and federal air quality regulations. A permit would be denied if the application did not meet the requirements of 326 IAC 2 or if the source would pose a threat to public health. Furthermore, appropriate enforcement actions would be taken for all violations. If you note any problems with the source, they can be reported to the state for appropriate action. To have your name removed from the OAQ mailing list, please contact Missy Jackson in writing or via telephone at 1-800-451-6027 extension 32632. No change to the permit was made as a result of this comment.

Upon further review, the OAQ has decided to make the following changes to the FESOP: The permit language is changed to read as follows (deleted language appears as ~~strikeouts~~, new language is **bolded**):

1. Condition A.5 Prior Permits Superseded replaced Prior Permit Conditions in the proposed permit to implement the intent of the new rule 326 IAC 2-1.1-9.5 as follows:

~~A.5 Prior Permit Conditions~~

- ~~(a) This permit shall be used as the primary document for determining compliance with applicable requirements established by previously issued permits.~~
- ~~(b) If, after issuance of this permit, it is determined that the permit is in nonconformance with an applicable requirement that applied to the source on the date of permit issuance, including any term or condition from a previously issued construction or operation permit, IDEM, OAQ, shall immediately take steps to reopen and revise this permit and issue a compliance order to the Permittee to ensure expeditious compliance with the applicable requirement until the permit is reissued.~~

A.5 Prior Permits Superseded [326 IAC 2-1.1-9.5]

- (a) All terms and conditions of previous permits issued pursuant to permitting programs approved into the state implementation plan have been either**
- (1) incorporated as originally stated,**
 - (2) revised, or**
 - (3) deleted**
- by this permit.**
- (b) All previous registrations and permits are superseded by this permit.**

2. Condition B.20 has had the words "by the requirements of" added as follows:

B.20 Permit Revision Requirement [326 IAC 2-8-11.1]

A modification, construction, or reconstruction is governed **by the requirements of** 326 IAC 2 and 326 IAC 2-8-11.1.

3. According to 326 IAC 2-8-6(b), all terms and conditions in a FESOP, including any provisions designed to limit a source's potential to emit, are enforceable by the U.S. EPA; therefore, the following changes have been made to the FESOP:

C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1. ~~326 IAC 4-1-3(a)(2)(A) and (B) are not federally enforceable.~~

C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2(3)]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and in 326 IAC 9-1-2. ~~326 IAC 9-1-2 is not federally enforceable.~~

C.5 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). ~~326 IAC 6-4-2(4) is not federally enforceable.~~

C.8 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted. ~~The provisions of 326 IAC 1-7-2, 326 IAC 1-7-3(c) and (d), 326 IAC 1-7-4(d)(3), (e), and (f), and 326 IAC 1-7-5(d) are not federally enforceable.~~

D.1.4 Sulfur Dioxide (SO₂) [326 IAC 2-8-4] [326 IAC 7-1.1-1] [326 IAC 7-2-1]

- (a) Pursuant to 326 IAC 2-8-4, the input of re-refined oil to the dryer/burner at Plant 157-03310 shall be limited to less than 799,200 gallons per twelve (12) consecutive month period, and the input of re-refined oil to the dryer/burner at Plant 157-03286 shall be limited to less than 532,800 gallons per twelve (12) consecutive month period, which is equivalent to SO₂ emissions of less than 99.9 tons per year.
- (b) Pursuant to 326 IAC 7-1.1-2, the sulfur content of the re-refined oil shall not exceed one percent (1.0%) by weight. Pursuant to 326 IAC 7-2-1, compliance shall be demonstrated on a thirty (30) day rolling weighted average. ~~326 IAC 7-1.1 and 326 IAC 7-2-1 are not federally enforceable.~~
- (c) For purposes of determining compliance based on SO₂ emissions, each gallon of No.2 distillate oil shall be equivalent to 0.4733 gallons of re-refined oil, each gallon of No.4 distillate oil shall be equivalent to 0.500 gallons of re-refined oil, each gallon of propane shall be equivalent to 0.000133 gallons of re-refined oil, each gallon of butane shall be equivalent to 0.000133 gallons of re-refined oil, and each million cubic feet of natural gas shall be equivalent to 4.00 gallons of re-refined oil.
- (d) Pursuant to 326 IAC 7-1.1-2, the sulfur content of the No.2 and No.4 distillate oils shall not exceed five tenth percent (0.5%) by weight. Pursuant to 326 IAC 7-2-1, compliance shall be demonstrated on a thirty (30) day rolling weighted average. ~~326 IAC 7-1.1 and 326 IAC 7-2-1 are not federally enforceable.~~

- 4. The IDEM, OAQ, has revised Condition B.15 Deviations from Permit Requirements and Conditions and certain Parametric Monitoring conditions in the D section of the permit to address concerns regarding the independent enforceability of permit conditions [see 326 IAC 2-8-4(5)]. The Parametric Monitoring conditions have been revised to establish normal operating conditions for the emission unit or control device and to require implementation of the compliance response plan when monitoring indicates operation is outside the normal range. Language that inferred that operating outside of the normal range could be considered by itself to be a deviation was removed. Condition B.15 was revised to remove language that could be considered to grant exemptions from permit requirements and to clarify reporting obligations:

B.15 Deviations from Permit Requirements and Conditions [326 IAC 2-8-4(3)(C)(ii)]

- (a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provision), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. ~~Deviations that are required to be reported by an applicable requirement A~~
deviation required to be reported pursuant to an applicable requirement that exists

independent of this permit shall be reported according to the schedule stated in the applicable requirement and ~~do~~ **does** not need to be included in this report.

The ~~notification by the Permittee~~ **Quarterly Deviation and Compliance Monitoring Report** does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit ~~or a rule. It does not include:~~

- (1) ~~An excursion from compliance monitoring parameters as identified in Section D of this permit unless tied to an applicable rule or limit; or~~
- (2) ~~Failure to implement elements of the Preventive Maintenance Plan unless such failure has caused or contributed to a deviation.~~

~~A Permittee's failure to take the appropriate response step when an excursion of a compliance monitoring parameter has occurred is a deviation.~~

- (c) Emergencies shall be included in the Quarterly Deviation and Compliance Monitoring Report.

D.1.16 Parametric Monitoring

- (a) The Permittee shall record the total static pressure drop across the baghouse used in conjunction with the mixer/dryer (157-03310), at least once per shift when the drying/mixing process is in operation when venting to the atmosphere. ~~Unless operated under conditions for which the Compliance Response Plan specifies otherwise, When for any one reading, the pressure drop across the baghouse shall be maintained within~~ **is outside the normal range of 2.0 and 8.0 inches of water or a range established during the latest stack test. The, the Permittee shall take reasonable response steps in accordance with Section C- Compliance Response Plan - Failure to Take Response Steps.** ~~for this unit shall contain troubleshooting contingency and response steps for when the pressure reading is outside of the above mentioned range for any one reading. A pressure reading that is outside the above mentioned range is not a deviation from this permit.~~ Failure to take response steps in accordance with Section C - Compliance ~~Monitoring Response Plan - Failure to Take Response Steps~~, shall be considered a violation of this permit.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

- (c) The Permittee shall record the total static pressure drop across the baghouse used in conjunction with the mixer/dryer (157-03286), at least once per shift when the drying/mixing process is in operation when venting to the atmosphere. ~~Unless operated under conditions for which the Compliance Response Plan specifies otherwise, When for any one reading, the pressure drop across the baghouse shall be maintained within~~ **is outside the normal range of 7.0 and 13.0 inches of water or a range established during the latest stack test. The, the Permittee shall take reasonable response steps in accordance with Section C- Compliance Response Plan - Failure to Take Response Steps.** ~~for this unit shall contain troubleshooting contingency and response steps for when the pressure reading is outside of the above mentioned range for any one reading. A pressure reading that is outside the above mentioned range is not a deviation from this permit.~~ Failure to take response steps in accordance with Section C - Compliance ~~Monitoring Response Plan - Failure to Take Response Steps~~, shall be considered a violation of this permit.

5. 326 IAC 2-8-3 requires any application form, report, or compliance certification to be certified by the Authorized Individual. IDEM, OAQ has revised Condition C.9 Asbestos Abatement Projects to clarify that the asbestos notification does not require a certification by the authorized individual, but it does need to be certified by the owner or operator. IDEM, OAQ has revised Condition C.19 Actions Related to Noncompliance Demonstrated by a Stack Test; a certification by the authorized individual is required for the notification sent in response to non-compliance with a stack test:

C.9 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

C.19 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-8-4] [326 IAC 2-8-5]

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The documents submitted pursuant to this condition ~~does not~~ require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

6. The IDEM, OAQ has restructured Condition C.18 to clarify the contents and implementation of the compliance response plan. The name of the condition has been changed to better reflect the contents of the condition. The language regarding the OAQ's discretion to excuse failure to perform monitoring under certain conditions has been deleted. The OAQ retains this discretion to excuse minor incidents of missing data; however, it is not necessary to state criteria regarding the exercise of that discretion in the permit. References to this condition throughout the proposed permit have been revised to reflect the name change of this condition. Condition C.18 has been changed as follows:

C.18 Compliance Monitoring Response Plan - Failure to Take Response Steps Preparation, Implementation, Records, and Reports [326 IAC 2-8-4] [326 IAC 2-8-5]

-
- (a) The Permittee is required to **prepare** ~~implement: a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. The compliance monitoring plan can be either an entirely new document, consist in whole of information contained in other documents, or consist of a combination of new information and information contained in other documents. If the compliance monitoring plan incorporates by reference information contained in other documents, the Permittee shall identify as part of the compliance monitoring plan the documents in which the information is found. The elements of the compliance monitoring plan are:~~
- ~~(1) This condition;~~
 - ~~(2) The Compliance Determination Requirements in Section D of this permit;~~
 - ~~(3) The Compliance Monitoring Requirements in Section D of this permit;~~
 - ~~(4) The Record Keeping and Reporting Requirements in Section C (General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this permit; and~~
 - (5) **A a Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. A CRP's shall be submitted to IDEM, OAQ upon request and shall be subject to review and approval by IDEM, OAQ. The CRP shall be prepared within ninety (90) days after issuance of this permit by the Permittee, supplemented from time to time by the Permittee, and maintained on site, and is comprised of:**
 - ~~(A)(1)~~ **Reasonable response steps that may be implemented in the event that compliance-related information indicates that a response step is needed pursuant to the requirements of Section D of this permit; and an expected timeframe for taking reasonable response steps.**
 - ~~(B) A time schedule for taking reasonable response steps including a schedule for devising additional response steps for situations that may not have been predicted.~~
- (2) **If, at any time, the Permittee takes reasonable response steps that are not set forth in the Permittee's current Compliance Response Plan and the Permittee documents such response in accordance with subsection (e) below, the Permittee shall amend its Compliance Response Plan to include such response steps taken.**
- (b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition **as follows:** Failure to take reasonable response steps may constitute a violation of the permit.
- (1) **Reasonable response steps shall be taken as set forth in the Permittee's current Compliance Response Plan; or**
 - (2) **If none of the reasonable response steps listed in the Compliance Response Plan is applicable or responsive to the excursion, the Permittee shall devise and implement additional response steps as expeditiously as practical.**

Taking such additional response steps shall not be considered a deviation from this permit so long as the Permittee documents such response steps in accordance with this condition.

- (3) If the Permittee determines that additional response steps would necessitate that the emissions unit or control device be shut down, the IDEM, OAQ shall be promptly notified of the expected date of the shut down, the status of the applicable compliance monitoring parameter with respect to normal, and the results of the actions taken up to the time of notification.**
- (4) Failure to take reasonable response steps shall constitute a violation of the permit.**
- ~~(c) Upon investigation of a compliance monitoring excursion, the~~ **The Permittee is excused from taking not required to take any** further response steps for any of the following reasons:

 - (1) A false reading occurs due to the malfunction of the monitoring equipment **and** ~~This shall be an excuse from taking further response steps providing that prompt~~ action was taken to correct the monitoring equipment.
 - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied.
 - (3) An automatic measurement was taken when the process was not operating.
 - (4) The process has already returned or is returning to operating within "normal" parameters and no response steps are required.
- (d) When implementing reasonable steps in response to a compliance monitoring condition, if the Permittee determines that an exceedance of an emission limitation has occurred, the Permittee shall report such deviations pursuant to Section B- Deviations from Permit Requirements and Conditions.**
- ~~(d)(e) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken. The Permittee shall record all instances when response steps are taken.~~ In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.
- ~~(e)(f) Except as otherwise provided by a rule or provided specifically in Section D, all monitoring as required in Section D shall be performed at all times when the equipment emission unit is operating, except for time necessary to perform quality assurance and maintenance activities. If monitoring is required by Section D and the equipment is not operating, then the Permittee may record the fact that the equipment is not operating or perform the required monitoring.~~
- ~~(f) At its discretion, IDEM may excuse the Permittee's failure to perform the monitoring and record keeping as required by Section D, if the Permittee provides adequate justification and documents that such failures do not exceed five percent (5%) of the operating time in any quarter. Temporary, unscheduled unavailability of qualified staff shall be considered~~

~~a valid reason for failure to perform the monitoring or record keeping requirements in
Section D.~~

February 25, 2002

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD)
for a Federally Enforceable State Operating Permit (FESOP) Renewal

Source Background and Description

Source Name: Rieth-Riley Construction Co., Inc.
Source Location: 3425 O'Farrel Road, Lafayette, Indiana 47904
County: Tippecanoe
SIC Code: 2951
Operation Permit No.: F 157-14146-03286
Permit Reviewer: Edward A. Longenberger

The Office of Air Quality (OAQ) has reviewed a FESOP renewal application from Rieth-Riley Construction Co., Inc. relating to the operation of a stationary hot batch-mix asphalt production source. The original FESOP 157-5448, issued on December 11, 1996 expires on December 11, 2001.

Source Definition

The source consists of two (2) stationary batch hot-mix asphalt plants. Since the two (2) plants are located on contiguous properties, have the same SIC codes and are owned by one (1) company, they are considered one (1) source. Both plants were permitted under the FESOP 157-5448-03286, issued on December 11, 1996. The plants are identified as Plant 157-03310 and Plant 157-03286.

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

Plant 157-03310 consists of the following:

- (a) One (1) batch mixer, identified as 157-03310, equipped with a baghouse for PM control, exhausted to Stack SV1a, capacity: 225 tons of asphalt per hour.
- (b) One (1) dryer burner, firing re-refined oil as primary fuel, using natural gas, No.2 fuel oil, No.4 fuel oil, propane gas and butane gas as backup fuels, exhausting to Stack SV1a, rated at 75 million British thermal units per hour.
- (c) Two (2) hot oil heaters, firing natural gas, capacity: 1.7 million British thermal units per hour, total.
- (d) One (1) tank, identified as 10 (previously known as 20), constructed in 1995, capacity: 30,000 gallons of liquid asphalt.
- (e) One (1) tank, identified as 11, constructed in 1978, capacity: 20,000 gallons of liquid asphalt.
- (f) Two (2) tanks, identified as 16A and 16B, constructed in 1978 and 1970, respectively,

capacity: 12,500 and 8,000 gallons of re-refined oil, respectively.

Plant 157-03286 consists of the following:

- (g) One (1) batch mixer, identified as 157-03286, equipped with a baghouse for PM control, exhausted to Stack SV1, capacity: 200 tons of asphalt per hour.
- (h) One (1) dryer burner, firing re-refined oil as primary fuel, using natural gas, No.2 fuel oil, No.4 fuel oil, propane gas and butane gas as backup fuels, exhausting to Stack SV1, rated at 82.4 million British thermal units per hour.
- (i) One (1) hot oil heater, firing propane, capacity: 0.8 million British thermal units per hour.
- (j) One (1) tank, identified as E (previously known as 15), constructed in 1986, capacity: 35,000 gallons of liquid asphalt.
- (k) One (1) tank, identified as J, constructed in 1980, capacity: 18,000 gallons of propane.
- (l) One (1) tank, identified as K, constructed in 1970, capacity: 20,000 gallons of re-refined oil.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

New Emission Units and Pollution Control Equipment Receiving Prior Approval

There are no new facilities proposed at this source during this review process.

Insignificant Activities

The source also consists of the following insignificant activities, as defined in 326 IAC 2-7-1(21):

- (a) Plant maintenance activities including grinding, sanding and welding. [326 IAC 6-3-2]
- (b) A laboratory as defined in 326 IAC 2-7-1(21)(D).

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

- (a) FESOP 157-5448-03286, issued on December 11, 1996, expires December 11, 2001;
- (b) AAF 157-10038-03286, issued on August 31, 1998;
- (c) SPR 157-12074-03286, issued on July 17, 2000;
- (d) AAF 157-12490-03286, issued on September 27, 2000; and
- (e) SPR 157-13666-03286, issued on June 26, 2001.

All conditions from previous approvals were incorporated into this FESOP except the following:

FESOP 157-5448-03286, issued on December 11, 1996

- (a) Conditions D.1.4 and D.2.3 contained limits on re-refined oil to the aggregate dryer/burners in order to satisfy the requirements of 326 IAC 2-8-4. A new SO₂ limit for the dryer/burners based on re-refined oil was calculated using the latest AP-42 emission factors. The limits are included in this renewal as Condition D.1.4.
- (b) Conditions D.1.2 and D.2.2 contained a PM₁₀ emission limit of 9.17 pounds per hour for each dryer/mixer in order to satisfy the requirements of 326 IAC 2-8-4. Due to updates in AP-42 emission factors, the PM₁₀ emission rate from each dryer/mixer must not exceed 8.79 pounds per hour in order to limit the potential to emit of PM₁₀ from the entire source to less than one hundred (100) tons per year.
- (c) Condition D.1.3 limited VOC emissions from cutback asphalt to less than 95.16 tons per year, in order to limit VOC emissions from the entire source to less than one hundred (100) tons per year. Due to updates in AP-42 emission factors, and the addition of backup fuels for the dryer/burner, the VOC emissions from cutback asphalt production must be limited to less than 95.0 tons per year.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the FESOP renewal be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An administratively complete FESOP renewal application for the purposes of this review was received on March 12, 2001. The application was submitted timely, post-marked more than nine (9) months before the December 11, 2001 expiration of the original FESOP.

Emission Calculations

See pages 1 through 24 of 24 of Appendix A of this document for detailed emissions calculations.

Unrestricted Potential Emissions

This table reflects the unrestricted potential emissions of the source, excluding the emission limits that were contained in the previous FESOP.

Pollutant	Unrestricted Potential Emissions (tons/year)
PM	59,986
PM ₁₀	8,563

Pollutant	Unrestricted Potential Emissions (tons/year)
SO ₂	728
VOC	greater than 100
CO	58.7
NO _x	144

Note: For the purpose of determining Title V applicability for particulates, PM₁₀, not PM, is the regulated pollutant in consideration.

HAPs	Potential To Emit (tons/year)
TOTAL HAPs *	14.1

* HAPs include benzene, ethyl benzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury and nickel compounds. No single HAP exceeds a potential to emit of greater than ten (10) tons per year.

The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of PM₁₀, VOC, NO_x and SO₂ are equal to or greater than one hundred (100) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-7.

Potential to Emit After Issuance

The source, issued a FESOP on December 11, 1996, has opted to remain a FESOP source, rather than apply for a Part 70 Operating Permit. The table below summarizes the potential to emit, reflecting all limits, of the emission units. Any control equipment is considered enforceable only after issuance of this Federally Enforceable State Operating Permit and only to the extent that the effect of the control equipment is made practically enforceable in the permit. Since the source has not constructed any new emission units, the source's potential to emit is based on the emission units included in the original FESOP. (F 157-5448, issued on December 11, 1996).

	Limited Potential to Emit (tons/year)						
Process/facility	PM	PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs
Batch Mixer including Burner (Plant 157-03310, Worst Case)	66.8	38.5	59.9	4.86	57.9	less than 59.1	14.1
Batch Mixer including Burner (Plant 157-03286, Worst Case)	37.2	38.5	40			less than 39.4	
Hot Oil Heaters (Worst Case)	0.037	0.080	0.035	0.051	0.748	1.47	negligible

	Limited Potential to Emit (tons/year)						
Process/facility	PM	PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs
Conveying/Handling	4.92	0.492	-	-	-	-	-
Screening	56.0	0.560	-	-	-	-	-
Storage Piles	0.434	0.152	-	-	-	-	-
Unpaved Roads	98.1	20.8	-	-	-	-	-
Cutback Asphalt	-	-	-	less than 95.0	-	-	-
Insignificant Activities	1.00	0.90	-	-	-	-	-
Total Emissions	264 including fugitives	less than 100	less than 100	less than 100	58.7	less than 100	single less than 10 total less than 25

The PM value for the Batch Mixer/Burners represents the allowable emissions pursuant to NSPS Subpart I.

County Attainment Status

The source is located in Tippecanoe County.

Pollutant	Status
PM ₁₀	Attainment
SO ₂	Attainment
NO ₂	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Tippecanoe County has been designated as attainment or unclassifiable for ozone.
- (b) Tippecanoe County has been classified as attainment or unclassifiable for all remaining criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Federal Rule Applicability

- (a) The asphalt plants identified as Plants 157-03310 and 157-03286 are still subject to the

New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.90, Subpart I). No owner or operator subject to the provisions of Subpart I shall discharge into the atmosphere from any affected facility any gases which:

- (1) contain particulate matter in excess of 0.04 grains per dry standard cubic foot, equivalent to 15.25 pounds per hour at a flow rate of 65,190 acfm and a temperature of 275 degrees Fahrenheit (Plant 157-03310), and equivalent to 8.49 pounds per hour at a flow rate of 36,290 acfm and a temperature of 275 degrees Fahrenheit (Plant 157-03286); and
 - (2) exhibit 20 percent opacity, or greater.
- (b) The one (1) tank, identified as 10, with a capacity of 30,000 gallons, and the one (1) tank, identified as E, with a capacity of 35,000 gallons are still subject to the New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.110b, Subpart Kb), since the tanks were constructed after July 23, 1984. Since the materials stored in these tanks have a maximum true vapor pressure less than fifteen (15) kiloPascals, these tanks are only subject to 40 CFR Part 60.116b, paragraphs (a) and (b), which require record keeping.
- (c) There are still no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14 and 40 CFR Parts 61, 62 and 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in Tippecanoe County and the potential to emit of CO, VOC, NO_x, PM₁₀, and SO₂ is less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 2-8-4 (FESOP)

- (a) In order to limit the potential to emit of PM₁₀ from the entire source to less than one hundred (100) tons per year, the PM₁₀ emissions from each batch mixer (including the burners), will be limited to 8.79 pounds per hour, equivalent to PM₁₀ emissions of 38.5 tons per year from each batch mixer.
- (b) The applicant has accepted a re-refined oil fuel limit to the dryer/burner at Plant 157-03310 of less than 799,200 gallons per twelve (12) consecutive month period. The applicant has also accepted a re-refined oil fuel limit to the dryer/burner at Plant 157-03286 of less than 532,800 gallons per twelve (12) consecutive month period. These limits are equivalent to an SO₂ limit of less than 99.9 tons per year (see page 13 of 24 of Appendix A). The full SO₂ potential emission rate of 0.035 tons per year from the three (3) hot oil heaters has been assumed in computing the limits.

For purposes of determining compliance based on SO₂ emissions, each gallon of No.2 distillate oil shall be equivalent to 0.4733 gallons of re-refined oil, each gallon of No.4 distillate oil shall be equivalent to 0.500 gallons of re-refined oil, each gallon of propane shall be equivalent to 0.000133 gallons of re-refined oil, each gallon of butane shall be equivalent to 0.000133 gallons of re-refined oil, and each million cubic feet of natural gas shall be equivalent to 4.00 gallons of re-refined oil.

- (c) Similarly, the applicant has accepted a propane fuel limit to the dryer/burner at Plant 157-03310 of less than 622,105 gallons per twelve (12) consecutive month period. The

applicant has also accepted a propane fuel limit to the dryer/burner at Plant 157-03286 of less than 414,736 gallons per twelve (12) consecutive month period. These limits are equivalent to an NO_x limit of less than 98.5 tons per year (see page 12 of 24 of Appendix A). The full NO_x potential emission rate of 1.47 tons per year from the three (3) hot oil heaters has been assumed in computing the limits.

For purposes of determining compliance based on NO_x emissions, each gallon of No.2 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of No.4 distillate oil shall be equivalent to 1.053 gallons of propane, each gallon of butane shall be equivalent to 1.105 gallons of propane, each gallon of re-refined oil shall be equivalent to 0.8421 gallons of propane, and each million cubic feet of natural gas shall be equivalent to 10,000 gallons of propane.

- (d) The applicant has also accepted a liquid binder usage limit for the production of cold mix cutback asphalt of less than 11,494 tons per twelve (12) consecutive month period which is equivalent to VOC emissions of 95.0 tons per year based on 5.1 percent diluent present in the asphalt.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity limitations), except as provided in 326 IAC 5-1-3 (Temporary alternative opacity limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR Part 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 8-5-2 (Miscellaneous operations: asphalt paving)

No person shall cause or allow the use of cutback asphalt or asphalt emulsion containing more than seven percent (7%) oil distillate by volume of emulsion for any paving application except the following purposes:

- (a) penetrating prime coating
- (b) stockpile storage
- (c) application during the months of November, December, January, February and March.

State Rule Applicability - Individual Facilities

326 IAC 6-3-2 (Process Operations)

Pursuant to 326 IAC 6-3-1(b)(2), if a limit is established by 326 IAC 12 concerning New Source Performance Standards, then the limitation contained in 326 IAC 6-3 shall not apply. Therefore, since the asphalt plants are subject to the New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.90, Subpart I), the requirements of 326 IAC 6-3-2 are not applicable to the aggregate mixer/dryers.

State Rule Applicability - Insignificant Activities

326 IAC 6-3-2 (Process Operations)

Pursuant to 326 IAC 6-3-2 (Process Operations), the PM emission rate from the insignificant plant maintenance activities shall not exceed the allowable PM emission rate based on the following equation:

Interpolation of the data for the process weight rate up to 60,000 pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

Testing Requirements

All testing requirements from previous approvals were incorporated into this FESOP.

Pursuant to FESOP 157-5448-03286, as revised by SPR 157-13666-03286, and pursuant to 40 CFR 60, Subpart I, an initial performance test is required for the aggregate dryer/burner identified as Plant 157-03310 within 60 days after achieving the maximum production rate at which the aggregate dryer will be operated using re-refined oil, but not later than 180 days after initial startup using re-refined oil. The test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

Pursuant to FESOP 157-5448-03286, as revised by SPR 157-12074-03286, and pursuant to 40 CFR 60, Subpart I, an initial performance test is required for the aggregate dryer/burner identified as Plant 157-03286 during the period between January 17, 2003 and July 17, 2003 (between 30 and 36 months after the July 17, 2001 issuance date of SPR 157-12074-03286). The Permittee shall perform PM and PM₁₀ testing utilizing methods approved by the Commissioner. The test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.

Compliance Requirements

Permits issued under 326 IAC 2-8 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-8-4. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

All compliance requirements from previous approvals were incorporated into this FESOP. The compliance monitoring requirements applicable to this source are as follows:

- (a) The one (1) batch mixer (Plant 157-03310) has applicable compliance monitoring conditions as specified below:
- (1) Visible emissions notations of the baghouse shall be performed once per shift during normal daylight operations. A trained employee will record whether emissions are normal or abnormal. For processes operated continuously "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time. In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions. A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process. The Compliance Response Plan for this unit shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.
 - (2) The Permittee shall record the total static pressure drop across the baghouse controlling the one (1) batch mixer, at least once per shift when the dryer/mixer is in operation. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pressure drop across the baghouse shall be maintained within the range of 2.0 to 8.0 inches of water or a range established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of the above mentioned range for any one reading.
 - (3) The inlet temperature to the baghouse shall be maintained within a range of 200-400 degrees Fahrenheit to prevent overheating of the bags and to prevent low temperatures from mudding up the bags. The operational parameters shall be monitored for indications of bag failure. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the inlet temperature reading is outside of the above mentioned range for any one reading.
 - (4) An inspection shall be performed each calendar quarter of all bags controlling the batch mixer operation when venting to the atmosphere. A baghouse inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting indoors. All defective bags shall be replaced.
 - (5) In the event that bag failure has been observed:
 - (a) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if there are no visible emissions or if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this proposed permit (Section B- Emergency Provisions). Within eight (8) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance

Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

- (b) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this proposed permit (Section B - Emergency Provisions).

These monitoring conditions are necessary because the baghouse for the one (1) batch mixer (Plant 157-03310) must operate properly to ensure compliance with 326 IAC 5-1 (Opacity), 326 IAC 2-8 (FESOP) and NSPS Subpart I.

- (b) The one (1) batch mixer (Plant 157-03286) has applicable compliance monitoring conditions as specified below:
 - (1) Visible emissions notations of the baghouse shall be performed once per shift during normal daylight operations. A trained employee will record whether emissions are normal or abnormal. For processes operated continuously "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time. In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions. A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process. The Compliance Response Plan for this unit shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.
 - (2) The Permittee shall record the total static pressure drop across the baghouse controlling the one (1) batch mixer, at least once per shift when the dryer/mixer is in operation. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pressure drop across the baghouse shall be maintained within the range of 7.0 to 13.0 inches of water or a range established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of the above mentioned range for any one reading.
 - (3) The inlet temperature to the baghouse shall be maintained within a range of 200-400 degrees Fahrenheit to prevent overheating of the bags and to prevent low temperatures from mudding up the bags. The operational parameters shall be monitored for indications of bag failure. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the inlet temperature reading is outside of the above mentioned range for any one reading.
 - (4) An inspection shall be performed each calendar quarter of all bags controlling the batch mixer operation when venting to the atmosphere. A baghouse inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting indoors. All defective bags shall be replaced.
 - (5) In the event that bag failure has been observed:

- (a) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if there are no visible emissions or if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this proposed permit (Section B- Emergency Provisions). Within eight (8) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.
- (b) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this proposed permit (Section B - Emergency Provisions).

These monitoring conditions are necessary because the baghouse for the one (1) batch mixer (Plant 157-03286) must operate properly to ensure compliance with 326 IAC 5-1 (Opacity), 326 IAC 2-8 (FESOP) and NSPS Subpart I.

Conclusion

The operation of this stationary hot batch-mix asphalt production source shall be subject to the conditions of the attached proposed FESOP Renewal No.: F 157-14146-03286.

Appendix A: Emission Calculations

Company Name: Rieth-Riley Construction Co., Inc.
Plant Location: 3425 O'Farrel Road, Lafayette, Indiana 47904
County: Tippecanoe
FESOP: F 157-14146
Plt. ID: 157-03286
Date: March 12, 2001
Permit Reviewer: Edward A. Longenberger

Plant 157-03310

I. Potential Emissions

A. Source emissions before controls

<div><div>Hot Oil Heater (oil/<100MMBTU/uncontrolled)</div><div>The following calculations determine the amount of emissions created by #2 & #1 distillate fuel oil @ <u>0.5</u> % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3</div><div><div>Pollutant: <u>0.000 MMBtu/hr * 8760 hrs/yr</u></div><div><u>138000.0 Btu/gal * 2000 lbs/ton</u></div><div><div>P M: 2.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>PM-10: 3.3 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>S O x: 71.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>N O x: 20.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>V O C: 0.34 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>C O: 5.0 lbs/1000 gal = <u>0.000</u> tons/yr</div></div></div></div> <div><div>Hot Oil Heater (Natural Gas) (gas/<100MMBTU/uncontrolled)</div><div>The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3</div><div><div>Pollutant: <u>1.700 MMBtu/hr * 8760 hrs/yr</u></div><div><u>1000 Btu/cf * 2000 lbs/ton</u></div><div><div>P M: 1.9 lbs/MMcf = <u>0.014</u> tons/yr</div><div>P M-10: 7.6 lbs/MMcf = <u>0.057</u> tons/yr</div><div>S O x: 0.6 lbs/MMcf = <u>0.004</u> tons/yr</div><div>N O x: 100.0 lbs/MMcf = <u>0.745</u> tons/yr</div><div>V O C: 5.5 lbs/MMcf = <u>0.041</u> tons/yr</div><div>C O: 84.0 lbs/MMcf = <u>0.625</u> tons/yr</div></div></div></div>	<div><div>Hot Oil Heater (butane)</div><div>The following calculations determine the amount of emissions created by butane gas @ <u>0.20</u> grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div><u>0.000 MMBtu/hr * 8760 hrs/yr</u></div><div><u>102600.0 Btu/gal * 2000 lbs/ton</u></div><div><div>P M: 0.5 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>PM-10: 0.5 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>S O x: 0.02 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>N O x: 15.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>V O C: 0.60 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>C O: 2.1 lbs/1000 gal = <u>0.000</u> tons/yr</div></div></div></div> <div><div>Hot Oil Heater (propane)</div><div>The following calculations determine the amount of emissions created by propane gas @ <u>0.20</u> grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div><u>0.000 MMBtu/hr * 8760 hrs/yr</u></div><div><u>91500.0 Btu/gal * 2000 lbs/ton</u></div><div><div>P M: 0.4 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>PM-10: 0.4 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>S O x: 0.02 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>N O x: 14.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>V O C: 1.90 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>C O: 3.2 lbs/1000 gal = <u>0.000</u> tons/yr</div></div></div></div>
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Dryer Burner (gas/<100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	<u>75.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf) = (tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.6242</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>2.497</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.197</u> tons/yr
N O x:	100.0 lbs/MMcf =	<u>32.8500</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>1.807</u> tons/yr
C O:	84.0 lbs/MMcf =	<u>27.594</u> tons/yr

Dryer Burner (gas/>100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	<u>0.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf)(tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.000</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>0.000</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.000</u> tons/yr
N O x:	190.0 lbs/MMcf =	<u>0.00</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>0.000</u> tons/yr
C O:	84.0 lbs/MMcf =	<u>0.000</u> tons/yr

Post-NSPS = 190

Dryer Burner (gas/>100MMBTU/low nox)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3 (low NOx burner = 140, flue gas recirculation = 100)

Pollutant:	<u>0.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf)(tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.000</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>0.000</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.000</u> tons/yr
N O x:	140.0 lbs/MMcf =	<u>0.000</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>0.000</u> tons/yr
C O:	84.0 lb/MMcf =	<u>0.000</u> tons/yr

Dryer Burner (#2 oil)

<100 MMBtu/hr

The following calculations determine the amount of emissions created by #2 & #1 distillate fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>75.0 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/1000 gal) = (tons/yr)</u>
	138000.0 Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>4.761</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>7.855</u> tons/yr
S O x:	71.0 lbs/1000 gal =	<u>169.011</u> tons/yr
N O x:	20.0 lbs/1000 gal =	<u>47.609</u> tons/yr
V O C:	0.34 lbs/1000 gal =	<u>0.809</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>11.902</u> tons/yr

If Rating >100 mmB

N O x: **24.0**
V O C: **0.20**

Dryer Burner (#4 oil/ <100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>75.000</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>4.761</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>7.855</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>178.533</u> tons/yr
N O x:	20.0 lbs/1000 gal =	<u>47.609</u> tons/yr
V O C:	0.34 lbs/1000 gal =	<u>0.809</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>11.902</u> tons/yr

Dryer Burner (#4 oil/ >100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>0.000</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	24.0 lbs/1000 gal =	<u>0.000</u> tons/yr
V O C:	0.20 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/ vaporizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Chapter 1.11

<u>0.000</u>	% Ash
<u>0.000</u>	% Lead

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>0.0</u> Btu/gal * 2000 lbs/ton	
P M:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
P M-10:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	50.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	11.0 lbs/1000 gal =	<u>0.000</u> tons/yr
VOC	1.0 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	1.7 lbs/1000 gal =	<u>0.000</u> tons/yr
Pb:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/atomizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 1.000 % sulfur, based on 8760 hours of use and AP-42 Chapter 1.11

0.500

% Ash

0.015

% Lead

Pollutant: 75.000 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
142000.000 Btu/gal * 2000 lbs/ton

P M: 33.0 lbs/1000 gal = 76.342 tons/yr

P M-10: 28.5 lbs/1000 gal = 65.931 tons/yr

S O x: 150.0 lbs/1000 gal = 347.007 tons/yr

N O x: 16.0 lbs/1000 gal = 37.014 tons/yr

VOC: 1.0 lbs/1000 gal = 2.313 tons/yr

C O: 2.10 lbs/1000 gal = 4.858 tons/yr

Pb: 0.75 lbs/1000 gal = 1.735 tons/yr

Dryer Burner (butane)

The following calculations determine the amount of emissions created by butane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 75.000 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
102600.0 Btu/gal * 2000 lbs/ton

P M: 0.6 lbs/1000 gal = 1.921 tons/yr

PM-10: 0.6 lbs/1000 gal = 1.921 tons/yr

S O x: 0.02 lbs/1000 gal = 0.058 tons/yr

N O x: 21.0 lbs/1000 gal = 67.237 tons/yr

V O C: 0.26 lbs/1000 gal = 0.832 tons/yr

C O: 3.6 lbs/1000 gal = 11.526 tons/yr

Dryer Burner (propane)

The following calculations determine the amount of emissions created by propane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 75.000 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
91500.0 Btu/gal * 2000 lbs/ton

P M: 0.6 lbs/1000 gal = 2.154 tons/yr

PM-10: 0.6 lbs/1000 gal = 2.154 tons/yr

S O x: 0.02 lbs/1000 gal = 0.072 tons/yr

N O x: 19.0 lbs/1000 gal = 68.213 tons/yr

V O C: 0.25 lbs/1000 gal = 0.898 tons/yr

C O: 3.2 lbs/1000 gal = 11.489 tons/yr

**** aggregate drying: drum-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and AP-42, Chapter 11.1, Table 11.1-3, rev. 12/00

P M:	28 lbs/ton x	<u>0.0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
P M-10:	6.5 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
Lead:	3.30E-06 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
HAPs:	0.0076 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** aggregate drying: batch-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and EPA SCC #3-05-002-05:

P M:	32 lbs/ton x	<u>225.0</u>	tons/hr x	8760 hrs/yr =	<u>31536.0</u> tons/yr
		2000	lbs/ton		
P M-10:	4.5 lbs/ton x	<u>225</u>	tons/hr x	8760 hrs/yr =	<u>4434.8</u> tons/yr
		2000	lbs/ton		
Lead:	3.30E-06 lbs/ton x	<u>225</u>	tons/hr x	8760 hrs/yr =	<u>0.003</u> tons/yr
		2000	lbs/ton		
HAPs:	0.0076 lbs/ton x	<u>225</u>	tons/hr x	8760 hrs/yr =	<u>7.490</u> tons/yr
		2000	lbs/ton		

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** conveying / handling ****

The following calculations determine the amount of emissions created by material handling of aggregate, based on 8760 hours of use and AP-42, Ch 11.19.2

$$E_f = .0032^* \frac{(U/5)^{1.3}}{(M/2)^{1.4}} * k = \underline{\underline{0.003}} \text{ lbs/ton}$$

where k= 1 (particle size multiplier)
U = 12 mph mean wind speed (worst case)
M = 5.0 % moisture

$$P M : \underline{\underline{0.003}} \text{ lbs/ton x } \underline{\underline{216.00}} \text{ tons/hr x } 8760 \text{ hrs/yr} = \underline{\underline{2.620}} \text{ tons/yr}$$

2000 lbs/ton

$$P M-10: 10\% \text{ of PM} = \underline{\underline{0.262}} \text{ tons/yr}$$

Screening PM: 216.00 tons/hr x 0.0315 lbs/ton / 2000 lbs/ton x 8760 hrs/yr = 29.802 tons/yr AP-42 Ch.11.19.2

$$P M-10: 10\% \text{ of PM} = \underline{\underline{2.980}} \text{ tons/yr}$$

**** unpaved roads ****

The following calculations determine the amount of emissions created by vehicle traffic on unpaved roads, based on 8760 hours of use and AP-42, Ch 13.2.2.

A. Tri-axle Truck

<u>22.50</u> trips/hr x			
<u>0.12</u> miles/roundtrip x			
8760 hrs/yr =		<u>24440.4</u> miles per year	
For PM	For PM-10		
5.83	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$		
10	= 1.24 lb/mile		
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)		
0.5	s = 4.8 mean % silt content of unpaved roads		
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)		
23	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)		
0.2	W = 23 tons average vehicle weight		
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)		
10	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)		
	S = 10 miles/hr vehicle speed		
5.83 lb/mi x 24440.4 mi/yr =		PM	<u>71.26</u> tons/yr
2000 lb/ton			
1.24 lb/mi x 24440.4 mi/yr =		PM-10	<u>15.11</u> tons/yr
2000 lb/ton			

B. Front End Loader

<u>38.8</u> trips/hr x			
<u>0.056</u> miles/roundtrip x			
8760 hrs/yr =		<u>19033.7</u> miles per year	
For PM	For PM-10		
3.42	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$		
10	= 0.73 lb/mile		
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)		
0.5	s = 4.8 mean % silt content of unpaved roads		
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)		
22	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)		
0.2	W = 22 tons average vehicle weight		
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)		
6	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)		
	S = 6 miles/hr vehicle speed		
3.42 lb/mi x 19033.728 mi/yr =		PM	<u>32.57</u> tons/yr
2000 lb/ton			
0.73 lb/mi x 19033.728 mi/yr =		PM-10	<u>6.94</u> tons/yr
2000 lb/ton			

All Trucking Total PM: 103.83 tons/yr
 Total PM-10: 22.05 tons/yr

**** storage ****

The following calculations determine the amount of emissions created by wind erosion of storage stockpiles, based on 8760 hours of use and AP-42, Ch 11.2.3.

$$\begin{aligned}
 E_f &= 1.7 \cdot (s/1.5) \cdot (365-p)/235 \cdot (f/15) \\
 &= 1.27 \text{ lbs/acre/day for sand} \\
 &= 1.39 \text{ lbs/acre/day for stone} \\
 &= 1.16 \text{ lbs/acre/day for slag} \\
 &= 1.16 \text{ lbs/acre/day for gravel} \\
 &= 0.93 \text{ lbs/acre/day for RAP} \\
 \text{where } s &= 1.1 \% \text{ silt for sand} \\
 s &= 1.2 \% \text{ silt of stone} \\
 s &= 1.0 \% \text{ silt of slag} \\
 s &= 1.0 \% \text{ silt of gravel} \\
 s &= 0.8 \% \text{ silt for RAP} \\
 p &= 125 \text{ days of rain greater than or equal to 0.01 inches} \\
 f &= 15 \% \text{ of wind greater than or equal to 12 mph}
 \end{aligned}$$

$$\begin{aligned}
 E_p (\text{storage}) &= \frac{E_f \cdot sc \cdot (20 \text{ cuft/ton}) \cdot (365 \text{ days/yr})}{(2000 \text{ lbs/ton}) \cdot (43560 \text{ sqft/acre}) \cdot (25 \text{ ft})} \\
 &= 0.085 \text{ tons/yr for sand} \\
 &= 0.279 \text{ tons/yr for stone} \\
 &= 0.000 \text{ tons/yr for slag} \\
 &= 0.039 \text{ tons/yr for gravel} \\
 &= 0.155 \text{ tons/yr for RAP} \\
 \text{Total PM:} &= \mathbf{0.559 \text{ tons/yr}}
 \end{aligned}$$

$$\begin{aligned}
 \text{where } sc &= 20,000 \text{ tons storage capacity for sand} \\
 sc &= 60,000 \text{ tons storage capacity for stone} \\
 sc &= 0,000 \text{ tons storage capacity for slag} \\
 sc &= 10,000 \text{ tons storage capacity for gravel} \\
 sc &= 50,000 \text{ tons storage capacity for RAP}
 \end{aligned}$$

$$\begin{aligned}
 \text{P M-10:} \quad 35\% \text{ of PM} &= 0.030 \text{ tons/yr for sand} \\
 35\% \text{ of PM} &= 0.098 \text{ tons/yr for stone} \\
 35\% \text{ of PM} &= 0.000 \text{ tons/yr for slag} \\
 35\% \text{ of PM} &= 0.014 \text{ tons/yr for gravel} \\
 35\% \text{ of PM} &= 0.054 \text{ tons/yr for RAP}
 \end{aligned}$$

$$\text{Total PM-10:} = \mathbf{0.196 \text{ tons/yr}}$$

Emissions before controls (combustion plus production) are as follows:

natural gas		#2 oil		#4 oil		waste oil	
P M:	31673 tons/yr	P M:	31678 tons/yr	P M:	31678 tons/yr	P M:	31749 tons/yr
P M-10:	4463 tons/yr	P M-10:	4468 tons/yr	P M-10:	4468 tons/yr	P M-10:	4526 tons/yr
S O x:	0.20 tons/yr	S O x:	169.02 tons/yr	S O x:	178.54 tons/yr	S O x:	347.01 tons/yr
N O x:	33.59 tons/yr	N O x:	48.35 tons/yr	N O x:	48.35 tons/yr	N O x:	37.76 tons/yr
V O C:	1.85 tons/yr	V O C:	0.850 tons/yr	V O C:	0.850 tons/yr	V O C:	2.35 tons/yr
C O:	28.22 tons/yr	C O:	12.53 tons/yr	C O:	12.53 tons/yr	C O:	5.48 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	1.738 tons/yr
HAPs:	7.49 tons/yr	HAPs:	7.49 tons/yr	HAPs:	7.490 tons/yr	HAPs:	7.490 tons/yr

butane		propane	
P M:	31675 tons/yr	P M:	31675 tons/yr
P M-10:	4462 tons/yr	P M-10:	4462 tons/yr
S O x:	0.06 tons/yr	S O x:	0.08 tons/yr
N O x:	67.98 tons/yr	N O x:	68.96 tons/yr
V O C:	0.87 tons/yr	V O C:	0.94 tons/yr
C O:	12.15 tons/yr	C O:	12.11 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr
HAPs:	7.49 tons/yr	HAPs:	7.49 tons/yr

B. Source emissions after controls

dryer combustion: gas

P M:	0.62 tons/yr x	0.00020 emitted after controls =	0.000 tons/yr
P M-10:	2.50 tons/yr x	0.00020 emitted after controls =	0.000 tons/yr

dryer combustion: #2 oil

P M:	4.76 tons/yr x	0.00020 emitted after controls =	0.001 tons/yr
P M-10:	7.86 tons/yr x	0.00020 emitted after controls =	0.002 tons/yr

hot oil heater combustion: gas

P M:	0.014 tons/yr x	1.00000 emitted after controls =	0.014 tons/yr
P M-10:	0.057 tons/yr x	1.00000 emitted after controls =	0.057 tons/yr

hot oil heater combustion: #2 oil

P M:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr
P M-10:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr

hot oil heater combustion: butane

P M:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr
P M-10:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr

hot oil heater combustion: propane

P M:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr
P M-10:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr

dryer combustion: #4 oil

P M:	4.76 tons/yr x	0.00020 emitted after controls =	0.001 tons/yr
P M-10:	7.86 tons/yr x	0.00020 emitted after controls =	0.002 tons/yr

dryer combustion: waste oil

P M:	76.34 tons/yr x	0.00020 emitted after controls =	0.015 tons/yr
P M-10:	65.93 tons/yr x	0.00020 emitted after controls =	0.013 tons/yr

dryer combustion: butane

P M:	1.92 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	1.92 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

dryer combustion: propane

P M:	2.15 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.15 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

aggregate drying:

P M:	31536.00 tons/yr x	<u>0.00020</u> emitted after controls =	<u>6.307</u> tons/yr
P M-10:	4434.75 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.887</u> tons/yr

conveying/handling:

P M:	2.62 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.620</u> tons/yr
P M-10:	0.26 tons/yr x	<u>1.000</u> emitted after controls =	<u>0.262</u> tons/yr

screening

P M:	29.80 tons/yr x	<u>1.000</u> emitted after controls =	<u>29.802</u> tons/yr
P M-10:	2.98 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.980</u> tons/yr

unpaved roads:

P M:	103.83 tons/yr x	50.00% emitted after controls =	<u>51.914</u> tons/yr
P M-10:	22.05 tons/yr x	50.00% emitted after controls =	<u>11.026</u> tons/yr

storage:

P M:	0.559 tons/yr x	50.00% emitted after controls =	<u>0.279</u> tons/yr
P M-10:	0.196 tons/yr x	50.00% emitted after controls =	<u>0.098</u> tons/yr

Emissions after controls (combustion plus production) are as follows:

	Butane	Propane	Gas	#2 Oil	#4 Oil	Waste Oil	
P M:	90.94	90.94	90.94	90.94	90.94	90.95	tons/yr
P M-10:	15.31	15.31	15.31	15.31	15.31	15.32	tons/yr

II. Allowable Emissions

A. The following calculations determine compliance with NSPS Subpart I, which limits stack emissions from asphalt plants to 0.04 gr/dscf:

$$\frac{0.04 \text{ grains}}{\text{dscf}} \times \frac{65190.000 \text{ acfm}}{\text{year}} \times \frac{1}{7000 \text{ grains}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{66.810 \text{ tons}}{\text{yr}}$$

$\frac{460}{+} \frac{528}{275} \text{ Temp} \times \frac{100}{100} - 5\% \text{ moisture}$

To meet NSPS Subpart I, the following value must be < amount calculated above

6.34 tons/yr

B. The following calculations determine the maximum sulfur content of distillate #2 fuel oil allowable by 326 IAC 7:

limit: 0.5 lbs/MMBtu

$$\frac{0.5 \text{ lbs/MMBtu}}{69 \text{ lbs/1000gal}} \times \frac{138000.0 \text{ Btu/gal}}{227.2 \text{ lbs/1000gal}} = \frac{69.0 \text{ lbs/1000gal}}{0.486 \text{ lbs/1000gal}} = \underline{0.486} \%$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7

C. The following calculations determine the maximum sulfur content of residual waste fuel oil allowable by 326-IAC 7:

limit: 1.6 lbs/MMBtu

$$\frac{1.6 \text{ lbs/MMBtu}}{227.2 \text{ lbs/1000gal}} \times \frac{142000.000 \text{ Btu/gal}}{227.2 \text{ lbs/1000gal}} = \frac{227.2 \text{ lbs/1000gal}}{214.0 \text{ lbs/1000gal}} = \underline{1.062} \%$$

(check burner type)

Sulfur content must be less than or equal to 1.062 % to comply with 326 IAC 7

D. The following calculations determine the maximum sulfur content of distillate #4 fuel oil allowable by 326-IAC 7:

limit: 0.5 lbs/MMBtu

$$\frac{0.5 \text{ lbs/MMBtu}}{69 \text{ lbs/1000gal}} \times \frac{138000.000 \text{ Btu/gal}}{227.2 \text{ lbs/1000gal}} = \frac{69 \text{ lbs/1000gal}}{142.0 \text{ lbs/1000gal}} = \underline{0.486} \%$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7

III. Limited Potential Emissions

FUEL USAGE LIMITATION: BASED ON NOx

FUEL USAGE LIMITATION FOR HOT OIL HEATER ALONE (OIL)

$$0.00 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 0.00 \frac{\text{lbs NOx}}{\text{year}}$$

$$0 \frac{\text{lbs NOx}}{\text{year}} / 20 \frac{\text{lbs NOx}}{\text{kgal}} = 0.00 \frac{\text{kgal}}{\text{year}}$$

$$0.00 \frac{\text{kgal}}{\text{year}} * \frac{98.5 \text{ tons/year}}{0 \text{ tons/year}} = 0.0 \frac{\text{gal fuel}}{\text{year}}$$

FUEL USAGE LIMITATION FOR BURNER (Gas)

$$68.94 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 137880 \frac{\text{lbs NOx}}{\text{year}}$$

$$137880 \frac{\text{lbs NOx}}{\text{year}} / 100.0 \frac{\text{lbs NOx}}{\text{MMcf}} = 1378.80 \frac{\text{MMcf}}{\text{year}}$$

$$1378.80 \frac{\text{MMcf}}{\text{year}} * \frac{98.5 \text{ tons/yr}}{68.94 \text{ tons/yr}} = 0.0 \frac{\text{MMcf}}{\text{year}} \text{ FESOP Limit}$$

FUEL USAGE LIMITATION FOR BURNER (#2 Oil)

$$99.90 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 199800.00 \frac{\text{lbs NOx}}{\text{year}}$$

$$199800.00 \frac{\text{lbs NOx}}{\text{year}} / 20 \frac{\text{lbs}}{1000 \text{ gal}} = 9990.00 \frac{\text{kgal}}{\text{year}}$$

$$9990.00 \frac{\text{kgal}}{\text{year}} * \frac{98.5 \text{ tons/yr}}{99.90 \text{ tons/yr}} = 9850.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit}$$

FUEL USAGE LIMITATION FOR BURNER (#4 Oil)

$$99.90 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 199800.00 \frac{\text{lbs NOx}}{\text{year}}$$

$$199800.00 \frac{\text{lbs NOx}}{\text{year}} / 20.0 \frac{\text{lbs}}{1000 \text{ gal}} = 9990.00 \frac{\text{kgal}}{\text{year}}$$

$$9990.00 \frac{\text{kgal}}{\text{year}} * \frac{98.5 \text{ tons/yr}}{99.90 \text{ tons/yr}} = 9850.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit}$$

FUEL USAGE LIMITATION FOR BURNER (Waste Oil)

$$\begin{array}{rclclcl} 77.68 \frac{\text{tons NOx}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 155360.00 \frac{\text{lbs NOx}}{\text{year}} \\ 155360.00 \frac{\text{lbs NOx}}{\text{year}} & / & 16.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9710.00 \frac{\text{kgal}}{\text{year}} \\ 9710.00 \frac{\text{kgal}}{\text{year}} & * & \frac{98.5 \text{ tons/yr}}{77.68 \text{ tons/yr}} & = & 0.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit} \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (butane)

$$\begin{array}{rclclcl} 141.11 \frac{\text{tons NOx}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 282216.00 \frac{\text{lbs NOx}}{\text{year}} \\ 282216.00 \frac{\text{lbs NOx}}{\text{year}} & / & 21.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 13438.86 \frac{\text{kgal}}{\text{year}} \\ 13438.86 \frac{\text{kgal}}{\text{year}} & * & \frac{98.5 \text{ tons/yr}}{141.11 \text{ tons/yr}} & = & 9381.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit} \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (propane)

$$\begin{array}{rclclcl} 143.16 \frac{\text{tons NOx}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 286314.00 \frac{\text{lbs NOx}}{\text{year}} \\ 286314.00 \frac{\text{lbs NOx}}{\text{year}} & / & 19.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 15069.16 \frac{\text{kgal}}{\text{year}} \\ 15069.16 \frac{\text{kgal}}{\text{year}} & * & \frac{98.5 \text{ tons/yr}}{143.16 \text{ tons/yr}} & = & 10368.4 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit} \end{array}$$

FUEL USAGE LIMITATION: BASED ON SO2**FUEL USAGE LIMITATION FOR HOT OIL HEATER ON OIL**

$$\begin{array}{rclclcl} 0.00 \frac{\text{tons SO2}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 0 \frac{\text{lbs SO2}}{\text{year}} \\ 0 \frac{\text{lbs SO2}}{\text{year}} & / & 70.0 \frac{\text{lbs SO2}}{\text{kgal}} & = & 0.00 \frac{\text{kgal}}{\text{year}} \\ 0 \frac{\text{kgal}}{\text{year}} & * & \frac{99.9 \text{ tons/year}}{0 \text{ tons/year}} & = & 0.0 \frac{\text{gal fuel}}{\text{year}} \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (Gas)

$$\begin{array}{rclclcl}
 0.414 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 828.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 828.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 0.6 \frac{\text{lbs SO}_2}{\text{MMcf}} & = & 1380.00 \frac{\text{MMcf}}{\text{year}} \\
 1380.00 \frac{\text{MMcf}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{0.41 \text{ tons/yr}} & = & 0.0 \frac{\text{MMcf}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (#2 Oil)

$$\begin{array}{rclclcl}
 354.7 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 709394.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 709394.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 71.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9991464.7887 \frac{\text{gal}}{\text{year}} \\
 9991464.79 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{354.70 \text{ tons/yr}} & = & 2814084.5 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (#4 Oil)

$$\begin{array}{rclclcl}
 374.7 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 749362 \frac{\text{lbs SO}_2}{\text{year}} \\
 749362.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 75.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9991493.3333 \frac{\text{gal}}{\text{year}} \\
 9991493.33 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{374.68 \text{ tons/yr}} & = & 2664000.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (Waste Oil)

$$\begin{array}{rclclcl}
 728.3 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 1456504.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 1456504.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 150.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9710026.67 \frac{\text{gal}}{\text{year}} \\
 9710026.67 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{728.25 \text{ tons/yr}} & = & 1332000.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (propane)

$$\begin{array}{rclclcl}
 \frac{0.15 \text{ tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 302.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 \\
 \frac{302.00 \text{ lbs SO}_2}{\text{year}} & / & \frac{0.02 \text{ lbs}}{1000 \text{ gal}} & = & 15100000.00 \frac{\text{gal}}{\text{year}} \\
 \\
 15100000.00 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{0.00 \text{ tons/yr}} & = & 0.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (butane)

$$\begin{array}{rclclcl}
 \frac{0.121 \text{ tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 242.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 \\
 \frac{242.00 \text{ lbs SO}_2}{\text{year}} & / & \frac{0.02 \text{ lbs}}{1000 \text{ gal}} & = & 13444444.44 \frac{\text{gal}}{\text{year}} \\
 \\
 13444444.44 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{0.000 \text{ tons/yr}} & = & 0.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

LIQUID BINDER USAGE LIMITATION: BASED ON VOC EMISSIONS FROM CUTBACK ASPHALT

Assume slow cure and 25% evaporative loss of diluent. Percent diluent in liquid binder = 8%
 Average Density Diluent = 5.84 lbs/gal Average Density of Asphalt Cement = 9.17 lbs/gal

The FESOP VOC emission limit of 100 tons per year minus the worst case sum of emissions from combustion and production = **95.00 tons/yr**

Limited tons of liquid binder = (limited VOC emission rate/25%)/density of diluent * 2,000 lbs/ton *(density of diluent + ((1 - %diluent)/%diluent) * density of asphalt cement) / 2000 lbs/ton)

LIQUID BINDER USAGE LIMITATION = 7242 tons/yr

Appendix A: Emission Calculations

Company Name: Rieth-Riley Construction Co., Inc.
Plant Location: 3425 O'Farrel Road, Lafayette, Indiana 47904
County: Tippecanoe
FESOP: F 157-14146
Plt. ID: 157-03286
Date: March 12, 2001
Permit Reviewer: Edward A. Longenberger

Plant 157-03286

I. Potential Emissions

A. Source emissions before controls

<div><div>A. Source Emissions before controls</div><div><div>Hot Oil Heater on Oil (oil/<100MMBTU/uncontrolled)</div><div><div>The following calculations determine the amount of emissions created by #2 & #1 distillate fuel oil @ <u>0.5</u> % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3</div><div><div>Pollutant: <u>0.000 MMBtu/hr * 8760 hrs/yr</u> * Ef (lbs/1000 gal) = (tons/yr) <u>138000.0 Btu/gal * 2000 lbs/ton</u></div><div><div><div>P M: 2.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>PM-10: 3.3 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>S O x: 71.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>N O x: 20.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>V O C: 0.34 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>C O: 5.0 lbs/1000 gal = <u>0.000</u> tons/yr</div></div></div></div></div></div></div>	<div><div>Hot Oil Heater (butane)</div><div><div>The following calculations determine the amount of emissions created by butane gas @ <u>0.20</u> grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div><u>0.000 MMBtu/hr * 8760 hrs/yr</u> * Ef (lbs/1000 gal) = (tons/yr) <u>102600.0 Btu/gal * 2000 lbs/ton</u></div><div><div><div>P M: 0.5 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>PM-10: 0.5 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>S O x: 0.02 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>N O x: 15.0 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>V O C: 0.60 lbs/1000 gal = <u>0.000</u> tons/yr</div><div>C O: 2.1 lbs/1000 gal = <u>0.000</u> tons/yr</div></div></div></div></div></div>
<div><div>Hot Oil Heater on Gas (gas/<100MMBTU/uncontrolled)</div><div><div>The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3</div><div><div>Pollutant: <u>0.000 MMBtu/hr * 8760 hrs/yr</u> * Ef (lbs/MMcf) = (tons/yr) <u>1000 Btu/cf * 2000 lbs/ton</u></div><div><div><div>P M: 1.9 lbs/MMcf = <u>0.000</u> tons/yr</div><div>P M-10: 7.6 lbs/MMcf = <u>0.000</u> tons/yr</div><div>S O x: 0.6 lbs/MMcf = <u>0.000</u> tons/yr</div><div>N O x: 100.0 lbs/MMcf = <u>0.000</u> tons/yr</div><div>V O C: 5.5 lbs/MMcf = <u>0.000</u> tons/yr</div><div>C O: 84.0 lbs/MMcf = <u>0.000</u> tons/yr</div></div></div></div></div></div>	<div><div>Hot Oil Heater (propane)</div><div><div>The following calculations determine the amount of emissions created by propane gas @ <u>0.20</u> grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div><u>0.800 MMBtu/hr * 8760 hrs/yr</u> * Ef (lbs/1000 gal) = (tons/yr) <u>91500.0 Btu/gal * 2000 lbs/ton</u></div><div><div><div>P M: 0.4 lbs/1000 gal = <u>0.015</u> tons/yr</div><div>PM-10: 0.4 lbs/1000 gal = <u>0.015</u> tons/yr</div><div>S O x: 0.02 lbs/1000 gal = <u>0.001</u> tons/yr</div><div>N O x: 14.0 lbs/1000 gal = <u>0.536</u> tons/yr</div><div>V O C: 1.90 lbs/1000 gal = <u>0.073</u> tons/yr</div><div>C O: 3.2 lbs/1000 gal = <u>0.123</u> tons/yr</div></div></div></div></div></div>

Dryer Burner (gas/<100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	82.400 MMBtu/hr * 8760 hrs/yr	* Ef (lbs/MMcf) = (tons/yr)
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	0.6857 tons/yr
P M-10:	7.6 lbs/MMcf =	2.743 tons/yr
S O x:	0.6 lbs/MMcf =	0.217 tons/yr
N O x:	100.0 lbs/MMcf =	36.0912 tons/yr
V O C:	5.5 lbs/MMcf =	1.985 tons/yr
C O:	84.0 lbs/MMcf =	30.317 tons/yr

Dryer Burner (gas/>100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	0.000 MMBtu/hr * 8760 hrs/yr	* Ef (lbs/MMcf)(tons/yr)
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	0.000 tons/yr
P M-10:	7.6 lbs/MMcf =	0.000 tons/yr
S O x:	0.6 lbs/MMcf =	0.000 tons/yr
N O x:	190.0 lbs/MMcf =	0.00 tons/yr
V O C:	5.5 lbs/MMcf =	0.000 tons/yr
C O:	84.0 lbs/MMcf =	0.000 tons/yr

Post-NSPS = 190

Dryer Burner (gas/>100MMBTU/low nox)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3 (low NOx burner = 140, flue gas recirculation = 100)

Pollutant:	0.000 MMBtu/hr * 8760 hrs/yr	* Ef (lbs/MMcf)(tons/yr)
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	0.000 tons/yr
P M-10:	7.6 lbs/MMcf =	0.000 tons/yr
S O x:	0.6 lbs/MMcf =	0.000 tons/yr
N O x:	140.0 lbs/MMcf =	0.000 tons/yr
V O C:	5.5 lbs/MMcf =	0.000 tons/yr
C O:	84.0 lb/MMcf =	0.000 tons/yr

Dryer Burner (#2 oil)

<100 MMBtu/hr

The following calculations determine the amount of emissions created by #2 & #1 distillate

fuel oil @ **0.5** % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	82.4 MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	138000.0 Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	5.231 tons/yr
PM-10:	3.3 lbs/1000 gal =	8.631 tons/yr
S O x:	71.0 lbs/1000 gal =	185.687 tons/yr
N O x:	20.0 lbs/1000 gal =	52.306 tons/yr
V O C:	0.34 lbs/1000 gal =	0.889 tons/yr
C O:	5.0 lbs/1000 gal =	13.077 tons/yr

If Rating >100 mmB

N O x: **24.0**
V O C: **0.20**

Dryer Burner (#4 oil/ <100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>82.400</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>5.231</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>8.631</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>196.148</u> tons/yr
N O x:	20.0 lbs/1000 gal =	<u>52.306</u> tons/yr
V O C:	0.34 lbs/1000 gal =	<u>0.889</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>13.077</u> tons/yr

Dryer Burner (#4 oil/ >100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>0.000</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	24.0 lbs/1000 gal =	<u>0.000</u> tons/yr
V O C:	0.20 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/ vaporizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Chapter 1.11

<u>0.000</u>	% Ash
<u>0.000</u>	% Lead

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>0.0</u> Btu/gal * 2000 lbs/ton	
P M:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
P M-10:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	50.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	11.0 lbs/1000 gal =	<u>0.000</u> tons/yr
VOC	1.0 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	1.7 lbs/1000 gal =	<u>0.000</u> tons/yr
Pb:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/atomizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 1.000 % sulfur, based on 8760 hours of use and AP-42 Chapter 1.110.500

% Ash

0.015

% Lead

Pollutant: 82.400 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
142000.000 Btu/gal * 2000 lbs/ton

P M:	33.0 lbs/1000 gal =	<u>83.874</u> tons/yr
P M-10:	28.5 lbs/1000 gal =	<u>72.437</u> tons/yr
S O x:	150.0 lbs/1000 gal =	<u>381.245</u> tons/yr
N O x:	16.0 lbs/1000 gal =	<u>40.666</u> tons/yr
VOC:	1.0 lbs/1000 gal =	<u>2.542</u> tons/yr
C O:	2.10 lbs/1000 gal =	<u>5.337</u> tons/yr
Pb:	0.75 lbs/1000 gal =	<u>1.906</u> tons/yr

Dryer Burner (butane)

The following calculations determine the amount of emissions created by butane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 82.400 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
102600.0 Btu/gal * 2000 lbs/ton

P M:	0.6 lbs/1000 gal =	<u>2.111</u> tons/yr
PM-10:	0.6 lbs/1000 gal =	<u>2.111</u> tons/yr
S O x:	0.02 lbs/1000 gal =	<u>0.063</u> tons/yr
N O x:	21.0 lbs/1000 gal =	<u>73.871</u> tons/yr
V O C:	0.26 lbs/1000 gal =	<u>0.915</u> tons/yr
C O:	3.6 lbs/1000 gal =	<u>12.664</u> tons/yr

Dryer Burner (propane)

The following calculations determine the amount of emissions created by propane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 82.400 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
91500.0 Btu/gal * 2000 lbs/ton

P M:	0.6 lbs/1000 gal =	<u>2.367</u> tons/yr
PM-10:	0.6 lbs/1000 gal =	<u>2.367</u> tons/yr
S O x:	0.02 lbs/1000 gal =	<u>0.079</u> tons/yr
N O x:	19.0 lbs/1000 gal =	<u>74.943</u> tons/yr
V O C:	0.25 lbs/1000 gal =	<u>0.986</u> tons/yr
C O:	3.2 lbs/1000 gal =	<u>12.622</u> tons/yr

**** aggregate drying: drum-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and AP-42, Chapter 11.1, Table 11.1-3, rev. 12/00

P M:	28 lbs/ton x	<u>0.0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
P M-10:	6.5 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
Lead:	3.30E-06 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
HAPs:	0.0076 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** aggregate drying: batch-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and EPA SCC #3-05-002-05:

P M:	32 lbs/ton x	<u>200.0</u>	tons/hr x	8760 hrs/yr =	<u>28032.0</u> tons/yr
		2000	lbs/ton		
P M-10:	4.5 lbs/ton x	<u>200</u>	tons/hr x	8760 hrs/yr =	<u>3942.0</u> tons/yr
		2000	lbs/ton		
Lead:	3.30E-06 lbs/ton x	<u>200</u>	tons/hr x	8760 hrs/yr =	<u>0.003</u> tons/yr
		2000	lbs/ton		
HAPs:	0.0076 lbs/ton x	<u>200</u>	tons/hr x	8760 hrs/yr =	<u>6.658</u> tons/yr
		2000	lbs/ton		

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** conveying / handling ****

The following calculations determine the amount of emissions created by material handling of aggregate, based on 8760 hours of use and AP-42, Ch 11.19.2

$$E_f = .0032^* \frac{(U/5)^{1.3}}{(M/2)^{1.4}} * k = \underline{\underline{0.003}} \text{ lbs/ton}$$

where k= 1 (particle size multiplier)
U = 12 mph mean wind speed (worst case)
M = 5.0 % moisture

$$P \text{ M : } \underline{\underline{0.003}} \text{ lbs/ton x } \underline{\underline{190.00}} \text{ tons/hr x } 8760 \text{ hrs/yr} = \underline{\underline{2.304}} \text{ tons/yr}$$

2000 lbs/ton

$$P \text{ M-10: } 10\% \text{ of PM} = \underline{\underline{0.230}} \text{ tons/yr}$$

Screening PM: 190.00 tons/hr x 0.0315 lbs/ton / 2000 lbs/ton x 8760 hrs/yr = 26.214 tons/yr AP-42 Ch.11.19.2

$$P \text{ M-10: } 10\% \text{ of PM} = \underline{\underline{2.621}} \text{ tons/yr}$$

**** unpaved roads ****

The following calculations determine the amount of emissions created by vehicle traffic on unpaved roads, based on 8760 hours of use and AP-42, Ch 13.2.2.

A. Tri-axle Truck

<u>20.00</u> trips/hr x				
<u>0.12</u> miles/roundtrip x				
8760 hrs/yr =		<u>21724.8</u> miles per year		
For PM	For PM-10			
5.83	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$			
10	= 1.24 lb/mile			
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)			
0.5	s = 4.8 mean % silt content of unpaved roads			
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)			
23	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)			
0.2	W = 23 tons average vehicle weight			
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)			
10	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)			
	S = 10 miles/hr vehicle speed			
	5.83 lb/mi x 24440.4 mi/yr =	PM	<u>71.26</u> tons/yr	
	2000 lb/ton			
	1.24 lb/mi x 24440.4 mi/yr =	PM-10	<u>15.11</u> tons/yr	
	2000 lb/ton			

B. Front End Loader

<u>34.5</u> trips/hr x				
<u>0.056</u> miles/roundtrip x				
8760 hrs/yr =		<u>16924.3</u> miles per year		
For PM	For PM-10			
3.42	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$			
10	= 0.73 lb/mile			
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)			
0.5	s = 4.8 mean % silt content of unpaved roads			
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)			
22	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)			
0.2	W = 22 tons average vehicle weight			
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)			
6	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)			
	S = 6 miles/hr vehicle speed			
	3.42 lb/mi x 16924.32 mi/yr =	PM	<u>28.96</u> tons/yr	
	2000 lb/ton			
	0.73 lb/mi x 16924.32 mi/yr =	PM-10	<u>6.17</u> tons/yr	
	2000 lb/ton			

All Trucking Total PM: 100.22 tons/yr
Total PM-10: 21.28 tons/yr

**** storage ****

The following calculations determine the amount of emissions created by wind erosion of storage stockpiles, based on 8760 hours of use and AP-42, Ch 11.2.3.

$$\begin{aligned}
 E_f &= 1.7 \cdot (s/1.5) \cdot (365-p)/235 \cdot (f/15) \\
 &= 1.74 \text{ lbs/acre/day for sand} \\
 &= 1.16 \text{ lbs/acre/day for stone} \\
 &= 1.16 \text{ lbs/acre/day for slag} \\
 &= 1.16 \text{ lbs/acre/day for gravel} \\
 &= 1.16 \text{ lbs/acre/day for RAP} \\
 \text{where } s &= 1.5 \% \text{ silt for sand} \\
 s &= 1.0 \% \text{ silt of stone} \\
 s &= 1.0 \% \text{ silt of slag} \\
 s &= 1.0 \% \text{ silt of gravel} \\
 s &= 1.0 \% \text{ silt for RAP} \\
 p &= 125 \text{ days of rain greater than or equal to 0.01 inches} \\
 f &= 15 \% \text{ of wind greater than or equal to 12 mph}
 \end{aligned}$$

$$\begin{aligned}
 E_p (\text{storage}) &= \frac{E_f \cdot sc \cdot (20 \text{ cuft/ton}) \cdot (365 \text{ days/yr})}{(2000 \text{ lbs/ton}) \cdot (43560 \text{ sqft/acre}) \cdot (25 \text{ ft})} \\
 &= 0.116 \text{ tons/yr for sand} \\
 &= 0.155 \text{ tons/yr for stone} \\
 &= 0.000 \text{ tons/yr for slag} \\
 &= 0.039 \text{ tons/yr for gravel} \\
 &= 0.000 \text{ tons/yr for RAP} \\
 \text{Total PM:} &= \underline{\underline{0.310 \text{ tons/yr}}}
 \end{aligned}$$

$$\begin{aligned}
 \text{where } sc &= 20,000 \text{ tons storage capacity for sand} \\
 sc &= 40,000 \text{ tons storage capacity for stone} \\
 sc &= 0,000 \text{ tons storage capacity for slag} \\
 sc &= 10,000 \text{ tons storage capacity for gravel} \\
 sc &= 0,000 \text{ tons storage capacity for RAP}
 \end{aligned}$$

$$\begin{aligned}
 \text{P M-10:} \quad 35\% \text{ of PM} &= 0.041 \text{ tons/yr for sand} \\
 35\% \text{ of PM} &= 0.054 \text{ tons/yr for stone} \\
 35\% \text{ of PM} &= 0.000 \text{ tons/yr for slag} \\
 35\% \text{ of PM} &= 0.014 \text{ tons/yr for gravel} \\
 35\% \text{ of PM} &= 0.000 \text{ tons/yr for RAP}
 \end{aligned}$$

$$\text{Total PM-10:} = \underline{\underline{0.109 \text{ tons/yr}}}$$

Emissions before controls (combustion plus production) are as follows:

natural gas		#2 oil		#4 oil		waste oil	
P M:	28162 tons/yr	P M:	28166 tons/yr	P M:	28166 tons/yr	P M:	28245 tons/yr
P M-10:	3969 tons/yr	P M-10:	3975 tons/yr	P M-10:	3975 tons/yr	P M-10:	4039 tons/yr
S O x:	0.22 tons/yr	S O x:	185.69 tons/yr	S O x:	196.15 tons/yr	S O x:	381.25 tons/yr
N O x:	36.63 tons/yr	N O x:	52.84 tons/yr	N O x:	52.84 tons/yr	N O x:	41.20 tons/yr
V O C:	2.06 tons/yr	V O C:	0.962 tons/yr	V O C:	0.962 tons/yr	V O C:	2.61 tons/yr
C O:	30.44 tons/yr	C O:	13.20 tons/yr	C O:	13.20 tons/yr	C O:	5.46 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	1.909 tons/yr
HAPs:	6.66 tons/yr	HAPs:	6.66 tons/yr	HAPs:	6.658 tons/yr	HAPs:	6.658 tons/yr

butane		propane	
P M:	28163 tons/yr	P M:	28163 tons/yr
P M-10:	3968 tons/yr	P M-10:	3969 tons/yr
S O x:	0.06 tons/yr	S O x:	0.08 tons/yr
N O x:	74.41 tons/yr	N O x:	75.48 tons/yr
V O C:	0.99 tons/yr	V O C:	1.06 tons/yr
C O:	12.79 tons/yr	C O:	12.74 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr
HAPs:	6.66 tons/yr	HAPs:	6.66 tons/yr

B. Source emissions after controls

dryer combustion: gas

P M:	0.69 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.74 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.001</u> tons/yr

dryer combustion: #2 oil

P M:	5.23 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.001</u> tons/yr
P M-10:	8.63 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.002</u> tons/yr

hot oil heater combustion: gas

P M:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr

hot oil heater combustion: #2 oil

P M:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr

hot oil heater combustion: butane

P M:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr

hot oil heater combustion: propane

P M:	0.015 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.015</u> tons/yr
P M-10:	0.015 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.015</u> tons/yr

dryer combustion: #4 oil

P M:	5.23 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.001</u> tons/yr
P M-10:	8.63 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.002</u> tons/yr

dryer combustion: waste oil

P M:	83.87 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.017</u> tons/yr
P M-10:	72.44 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.014</u> tons/yr

dryer combustion: butane

P M:	2.11 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.11 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

dryer combustion: propane

P M:	2.37 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.37 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

aggregate drying:

P M:	28032.00 tons/yr x	<u>0.00020</u> emitted after controls =	<u>5.606</u> tons/yr
P M-10:	3942.00 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.788</u> tons/yr

conveying/handling:

P M:	2.30 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.304</u> tons/yr
P M-10:	0.23 tons/yr x	<u>1.000</u> emitted after controls =	<u>0.230</u> tons/yr

screening

P M:	26.21 tons/yr x	<u>1.000</u> emitted after controls =	<u>26.214</u> tons/yr
P M-10:	2.62 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.621</u> tons/yr

unpaved roads:

P M:	100.22 tons/yr x	50.00% emitted after controls =	<u>50.110</u> tons/yr
P M-10:	21.28 tons/yr x	50.00% emitted after controls =	<u>10.641</u> tons/yr

storage:

P M:	0.310 tons/yr x	50.00% emitted after controls =	<u>0.155</u> tons/yr
P M-10:	0.109 tons/yr x	50.00% emitted after controls =	<u>0.054</u> tons/yr

Emissions after controls (combustion plus production) are as follows:

	Butane	Propane	Gas	#2 Oil	#4 Oil	Waste Oil	
P M:	84.41	84.41	84.41	84.41	84.41	84.42	tons/yr
P M-10:	14.35	14.35	14.35	14.35	14.35	14.37	tons/yr

II. Allowable Emissions

A. The following calculations determine compliance with NSPS Subpart I, which limits stack emissions from asphalt plants to 0.04 gr/dscf:

$$\frac{0.04 \text{ grains}}{\text{dscf}} \times \frac{36290.000 \text{ acfm}}{\text{year}} \times \frac{1}{7000 \text{ grains}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{37.192 \text{ tons/yr}}{\text{year}}$$

To meet NSPS Subpart I, the following value must be < amount calculated above

5.64 tons/yr

B. The following calculations determine the maximum sulfur content of distillate #2 fuel oil allowable by 326 IAC 7:

limit: 0.5 lbs/MMBtu

$$0.5 \text{ lbs/MMBtu} \times \frac{138000.0 \text{ Btu/gal}}{69 \text{ lbs/1000gal}} = \frac{69.0 \text{ lbs/1000gal}}{0.486}$$

$$\frac{69 \text{ lbs/1000gal}}{0.486} = \frac{142.0 \text{ lb/1000 gal}}{0.486}$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7 and to limit SO₂ emissions to 99 tons per year or less.

C. The following calculations determine the maximum sulfur content of residual waste fuel oil allowable by 326-IAC 7:

limit: 1.6 lbs/MMBtu

$$1.6 \text{ lbs/MMBtu} \times \frac{142000.000 \text{ Btu/gal}}{227.2 \text{ lbs/1000gal}} = \frac{227.2 \text{ lbs/1000gal}}{1.062}$$

$$\frac{227.2 \text{ lbs/1000gal}}{1.062} = \frac{214.0 \text{ lbs/1000 gal}}{1.062} \text{ (check burner type)}$$

Sulfur content must be less than or equal to 1.062 % to comply with 326 IAC 7 and to limit SO₂ emissions to 99 tons per year or less.

D. The following calculations determine the maximum sulfur content of distillate #4 fuel oil allowable by 326-IAC 7:

limit: 0.5 lbs/MMBtu

$$0.5 \text{ lbs/MMBtu} \times \frac{138000.000 \text{ Btu/gal}}{69 \text{ lbs/1000gal}} = \frac{69 \text{ lbs/1000gal}}{0.486}$$

$$\frac{69 \text{ lbs/1000gal}}{0.486} = \frac{142.0 \text{ lbs/1000 gal}}{0.486}$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7 and to limit SO₂ emissions to 99 tons per year or less.

Appendix A: Emission Calculations

Company Name: Rieth-Riley Construction Co., Inc.
Plant Location: 3425 O'Farrel Road, Lafayette, Indiana 47904
County: Tippecanoe
FESOP: F 157-14146
Plt. ID: 157-03286
Date: March 12, 2001
Permit Reviewer: Edward A. Longenberger

Plant 157-03310

I. Potential Emissions

A. Source emissions before controls

<div><div>Hot Oil Heater (oil/<100MMBTU/uncontrolled)</div><div>The following calculations determine the amount of emissions created by #2 & #1 distillate fuel oil @ <u>0.5</u> % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3</div><div><div>Pollutant:</div><div><div><div>0.000 MMBtu/hr * 8760 hrs/yr</div><div>138000.0 Btu/gal * 2000 lbs/ton</div></div><div><div>* Ef (lbs/1000 gal) = (tons/yr)</div></div></div><div><div><div>P M:</div><div>2.0 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>PM-10:</div><div>3.3 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>S O x:</div><div>71.0 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>N O x:</div><div>20.0 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>V O C:</div><div>0.34 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>C O:</div><div>5.0 lbs/1000 gal =</div><div>0.000 tons/yr</div></div></div></div></div>	<div><div>Hot Oil Heater (butane)</div><div>The following calculations determine the amount of emissions created by butane gas @ <u>0.20</u> grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div><div>0.000 MMBtu/hr * 8760 hrs/yr</div><div>102600.0 Btu/gal * 2000 lbs/ton</div></div><div><div>* Ef (lbs/1000 gal) = (tons/yr)</div></div></div><div><div><div>P M:</div><div>0.5 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>PM-10:</div><div>0.5 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>S O x:</div><div>0.02 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>N O x:</div><div>15.0 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>V O C:</div><div>0.60 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>C O:</div><div>2.1 lbs/1000 gal =</div><div>0.000 tons/yr</div></div></div></div>
<div><div>Hot Oil Heater (Natural Gas) (gas/<100MMBTU/uncontrolled)</div><div>The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3</div><div><div><div>Pollutant:</div><div><div><div>1.700 MMBtu/hr * 8760 hrs/yr</div><div>1000 Btu/cf * 2000 lbs/ton</div></div><div><div>* Ef (lbs/MMcf) = (tons/yr)</div></div></div><div><div><div>P M:</div><div>1.9 lbs/MMcf =</div><div>0.014 tons/yr</div></div><div><div>P M-10:</div><div>7.6 lbs/MMcf =</div><div>0.057 tons/yr</div></div><div><div>S O x:</div><div>0.6 lbs/MMcf =</div><div>0.004 tons/yr</div></div><div><div>N O x:</div><div>100.0 lbs/MMcf =</div><div>0.745 tons/yr</div></div><div><div>V O C:</div><div>5.5 lbs/MMcf =</div><div>0.041 tons/yr</div></div><div><div>C O:</div><div>84.0 lbs/MMcf =</div><div>0.625 tons/yr</div></div></div></div></div></div>	<div><div>Hot Oil Heater (propane)</div><div>The following calculations determine the amount of emissions created by propane gas @ <u>0.20</u> grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div><div>0.000 MMBtu/hr * 8760 hrs/yr</div><div>91500.0 Btu/gal * 2000 lbs/ton</div></div><div><div>* Ef (lbs/1000 gal) = (tons/yr)</div></div></div><div><div><div>P M:</div><div>0.4 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>PM-10:</div><div>0.4 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>S O x:</div><div>0.02 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>N O x:</div><div>14.0 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>V O C:</div><div>1.90 lbs/1000 gal =</div><div>0.000 tons/yr</div></div><div><div>C O:</div><div>3.2 lbs/1000 gal =</div><div>0.000 tons/yr</div></div></div></div>

Dryer Burner (gas/<100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	<u>75.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf) = (tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.6242</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>2.497</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.197</u> tons/yr
N O x:	100.0 lbs/MMcf =	<u>32.8500</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>1.807</u> tons/yr
C O:	84.0 lbs/MMcf =	<u>27.594</u> tons/yr

Dryer Burner (gas/>100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	<u>0.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf)(tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.000</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>0.000</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.000</u> tons/yr
N O x:	190.0 lbs/MMcf =	<u>0.00</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>0.000</u> tons/yr
C O:	84.0 lbs/MMcf =	<u>0.000</u> tons/yr

Post-NSPS = 190

Dryer Burner (gas/>100MMBTU/low nox)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3 (low NOx burner = 140, flue gas recirculation = 100)

Pollutant:	<u>0.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf)(tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.000</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>0.000</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.000</u> tons/yr
N O x:	140.0 lbs/MMcf =	<u>0.000</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>0.000</u> tons/yr
C O:	84.0 lb/MMcf =	<u>0.000</u> tons/yr

Dryer Burner (#2 oil)

<100 MMBtu/hr

The following calculations determine the amount of emissions created by #2 & #1 distillate fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>75.0 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/1000 gal) = (tons/yr)</u>
	138000.0 Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>4.761</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>7.855</u> tons/yr
S O x:	71.0 lbs/1000 gal =	<u>169.011</u> tons/yr
N O x:	20.0 lbs/1000 gal =	<u>47.609</u> tons/yr
V O C:	0.34 lbs/1000 gal =	<u>0.809</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>11.902</u> tons/yr

If Rating >100 mmB

N O x: **24.0**
V O C: **0.20**

Dryer Burner (#4 oil/ <100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>75.000</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>4.761</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>7.855</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>178.533</u> tons/yr
N O x:	20.0 lbs/1000 gal =	<u>47.609</u> tons/yr
V O C:	0.34 lbs/1000 gal =	<u>0.809</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>11.902</u> tons/yr

Dryer Burner (#4 oil/ >100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>0.000</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	24.0 lbs/1000 gal =	<u>0.000</u> tons/yr
V O C:	0.20 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/ vaporizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Chapter 1.11

<u>0.000</u>	% Ash
<u>0.000</u>	% Lead

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>0.0</u> Btu/gal * 2000 lbs/ton	
P M:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
P M-10:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	50.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	11.0 lbs/1000 gal =	<u>0.000</u> tons/yr
VOC	1.0 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	1.7 lbs/1000 gal =	<u>0.000</u> tons/yr
Pb:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/atomizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 1.000 % sulfur, based on 8760 hours of use and AP-42 Chapter 1.11

0.500

% Ash

0.015

% Lead

Pollutant: 75.000 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
142000.000 Btu/gal * 2000 lbs/ton

P M: 33.0 lbs/1000 gal = 76.342 tons/yr

P M-10: 28.5 lbs/1000 gal = 65.931 tons/yr

S O x: 150.0 lbs/1000 gal = 347.007 tons/yr

N O x: 16.0 lbs/1000 gal = 37.014 tons/yr

VOC: 1.0 lbs/1000 gal = 2.313 tons/yr

C O: 2.10 lbs/1000 gal = 4.858 tons/yr

Pb: 0.75 lbs/1000 gal = 1.735 tons/yr

Dryer Burner (butane)

The following calculations determine the amount of emissions created by butane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 75.000 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
102600.0 Btu/gal * 2000 lbs/ton

P M: 0.6 lbs/1000 gal = 1.921 tons/yr

PM-10: 0.6 lbs/1000 gal = 1.921 tons/yr

S O x: 0.02 lbs/1000 gal = 0.058 tons/yr

N O x: 21.0 lbs/1000 gal = 67.237 tons/yr

V O C: 0.26 lbs/1000 gal = 0.832 tons/yr

C O: 3.6 lbs/1000 gal = 11.526 tons/yr

Dryer Burner (propane)

The following calculations determine the amount of emissions created by propane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 75.000 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
91500.0 Btu/gal * 2000 lbs/ton

P M: 0.6 lbs/1000 gal = 2.154 tons/yr

PM-10: 0.6 lbs/1000 gal = 2.154 tons/yr

S O x: 0.02 lbs/1000 gal = 0.072 tons/yr

N O x: 19.0 lbs/1000 gal = 68.213 tons/yr

V O C: 0.25 lbs/1000 gal = 0.898 tons/yr

C O: 3.2 lbs/1000 gal = 11.489 tons/yr

**** aggregate drying: drum-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and AP-42, Chapter 11.1, Table 11.1-3, rev. 12/00

P M:	28 lbs/ton x	<u>0.0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
P M-10:	6.5 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
Lead:	3.30E-06 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		
HAPs:	0.0076 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u> tons/yr
		2000	lbs/ton		

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** aggregate drying: batch-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and EPA SCC #3-05-002-05:

P M:	32 lbs/ton x	<u>225.0</u>	tons/hr x	8760 hrs/yr =	<u>31536.0</u> tons/yr
		2000	lbs/ton		
P M-10:	4.5 lbs/ton x	<u>225</u>	tons/hr x	8760 hrs/yr =	<u>4434.8</u> tons/yr
		2000	lbs/ton		
Lead:	3.30E-06 lbs/ton x	<u>225</u>	tons/hr x	8760 hrs/yr =	<u>0.003</u> tons/yr
		2000	lbs/ton		
HAPs:	0.0076 lbs/ton x	<u>225</u>	tons/hr x	8760 hrs/yr =	<u>7.490</u> tons/yr
		2000	lbs/ton		

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** conveying / handling ****

The following calculations determine the amount of emissions created by material handling of aggregate, based on 8760 hours of use and AP-42, Ch 11.19.2

$$E_f = .0032^* \frac{(U/5)^{1.3}}{(M/2)^{1.4}} * k = \underline{\underline{0.003}} \text{ lbs/ton}$$

where k= 1 (particle size multiplier)
U = 12 mph mean wind speed (worst case)
M = 5.0 % moisture

$$P M : \underline{\underline{0.003}} \text{ lbs/ton x } \underline{\underline{216.00}} \text{ tons/hr x } 8760 \text{ hrs/yr} = \underline{\underline{2.620}} \text{ tons/yr}$$

2000 lbs/ton

$$P M-10: 10\% \text{ of PM} = \underline{\underline{0.262}} \text{ tons/yr}$$

Screening PM: 216.00 tons/hr x 0.0315 lbs/ton / 2000 lbs/ton x 8760 hrs/yr = 29.802 tons/yr AP-42 Ch.11.19.2

$$P M-10: 10\% \text{ of PM} = \underline{\underline{2.980}} \text{ tons/yr}$$

**** unpaved roads ****

The following calculations determine the amount of emissions created by vehicle traffic on unpaved roads, based on 8760 hours of use and AP-42, Ch 13.2.2.

A. Tri-axle Truck

<u>22.50</u> trips/hr x				
<u>0.12</u> miles/roundtrip x				
8760 hrs/yr =		<u>24440.4</u> miles per year		
For PM	For PM-10			
5.83	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$			
10	= 1.24 lb/mile			
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)			
0.5	s = 4.8 mean % silt content of unpaved roads			
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)			
23	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)			
0.2	W = 23 tons average vehicle weight			
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)			
10	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)			
	S = 10 miles/hr vehicle speed			
	5.83 lb/mi x 24440.4 mi/yr =	PM	<u>71.26</u> tons/yr	
	2000 lb/ton			
	1.24 lb/mi x 24440.4 mi/yr =	PM-10	<u>15.11</u> tons/yr	
	2000 lb/ton			

B. Front End Loader

<u>38.8</u> trips/hr x				
<u>0.056</u> miles/roundtrip x				
8760 hrs/yr =		<u>19033.7</u> miles per year		
For PM	For PM-10			
3.42	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$			
10	= 0.73 lb/mile			
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)			
0.5	s = 4.8 mean % silt content of unpaved roads			
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)			
22	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)			
0.2	W = 22 tons average vehicle weight			
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)			
6	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)			
	S = 6 miles/hr vehicle speed			
	3.42 lb/mi x 19033.728 mi/yr =	PM	<u>32.57</u> tons/yr	
	2000 lb/ton			
	0.73 lb/mi x 19033.728 mi/yr =	PM-10	<u>6.94</u> tons/yr	
	2000 lb/ton			

All Trucking Total PM: 103.83 tons/yr
 Total PM-10: 22.05 tons/yr

**** storage ****

The following calculations determine the amount of emissions created by wind erosion of storage stockpiles, based on 8760 hours of use and AP-42, Ch 11.2.3.

$$\begin{aligned}
 E_f &= 1.7 \cdot (s/1.5) \cdot (365-p)/235 \cdot (f/15) \\
 &= 1.27 \text{ lbs/acre/day for sand} \\
 &= 1.39 \text{ lbs/acre/day for stone} \\
 &= 1.16 \text{ lbs/acre/day for slag} \\
 &= 1.16 \text{ lbs/acre/day for gravel} \\
 &= 0.93 \text{ lbs/acre/day for RAP} \\
 \text{where } s &= 1.1 \% \text{ silt for sand} \\
 s &= 1.2 \% \text{ silt of stone} \\
 s &= 1.0 \% \text{ silt of slag} \\
 s &= 1.0 \% \text{ silt of gravel} \\
 s &= 0.8 \% \text{ silt for RAP} \\
 p &= 125 \text{ days of rain greater than or equal to 0.01 inches} \\
 f &= 15 \% \text{ of wind greater than or equal to 12 mph}
 \end{aligned}$$

$$\begin{aligned}
 E_p (\text{storage}) &= \frac{E_f \cdot sc \cdot (20 \text{ cuft/ton}) \cdot (365 \text{ days/yr})}{(2000 \text{ lbs/ton}) \cdot (43560 \text{ sqft/acre}) \cdot (25 \text{ ft})} \\
 &= 0.085 \text{ tons/yr for sand} \\
 &= 0.279 \text{ tons/yr for stone} \\
 &= 0.000 \text{ tons/yr for slag} \\
 &= 0.039 \text{ tons/yr for gravel} \\
 &= 0.155 \text{ tons/yr for RAP} \\
 \text{Total PM:} &= \mathbf{0.559 \text{ tons/yr}}
 \end{aligned}$$

$$\begin{aligned}
 \text{where } sc &= 20,000 \text{ tons storage capacity for sand} \\
 sc &= 60,000 \text{ tons storage capacity for stone} \\
 sc &= 0,000 \text{ tons storage capacity for slag} \\
 sc &= 10,000 \text{ tons storage capacity for gravel} \\
 sc &= 50,000 \text{ tons storage capacity for RAP}
 \end{aligned}$$

$$\begin{aligned}
 \text{P M-10:} \quad 35\% \text{ of PM} &= 0.030 \text{ tons/yr for sand} \\
 35\% \text{ of PM} &= 0.098 \text{ tons/yr for stone} \\
 35\% \text{ of PM} &= 0.000 \text{ tons/yr for slag} \\
 35\% \text{ of PM} &= 0.014 \text{ tons/yr for gravel} \\
 35\% \text{ of PM} &= 0.054 \text{ tons/yr for RAP}
 \end{aligned}$$

$$\text{Total PM-10:} = \mathbf{0.196 \text{ tons/yr}}$$

Emissions before controls (combustion plus production) are as follows:

natural gas		#2 oil		#4 oil		waste oil	
P M:	31673 tons/yr	P M:	31678 tons/yr	P M:	31678 tons/yr	P M:	31749 tons/yr
P M-10:	4463 tons/yr	P M-10:	4468 tons/yr	P M-10:	4468 tons/yr	P M-10:	4526 tons/yr
S O x:	0.20 tons/yr	S O x:	169.02 tons/yr	S O x:	178.54 tons/yr	S O x:	347.01 tons/yr
N O x:	33.59 tons/yr	N O x:	48.35 tons/yr	N O x:	48.35 tons/yr	N O x:	37.76 tons/yr
V O C:	1.85 tons/yr	V O C:	0.850 tons/yr	V O C:	0.850 tons/yr	V O C:	2.35 tons/yr
C O:	28.22 tons/yr	C O:	12.53 tons/yr	C O:	12.53 tons/yr	C O:	5.48 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	1.738 tons/yr
HAPs:	7.49 tons/yr	HAPs:	7.49 tons/yr	HAPs:	7.490 tons/yr	HAPs:	7.490 tons/yr

butane		propane	
P M:	31675 tons/yr	P M:	31675 tons/yr
P M-10:	4462 tons/yr	P M-10:	4462 tons/yr
S O x:	0.06 tons/yr	S O x:	0.08 tons/yr
N O x:	67.98 tons/yr	N O x:	68.96 tons/yr
V O C:	0.87 tons/yr	V O C:	0.94 tons/yr
C O:	12.15 tons/yr	C O:	12.11 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr
HAPs:	7.49 tons/yr	HAPs:	7.49 tons/yr

B. Source emissions after controls

dryer combustion: gas

P M:	0.62 tons/yr x	0.00020 emitted after controls =	0.000 tons/yr
P M-10:	2.50 tons/yr x	0.00020 emitted after controls =	0.000 tons/yr

dryer combustion: #2 oil

P M:	4.76 tons/yr x	0.00020 emitted after controls =	0.001 tons/yr
P M-10:	7.86 tons/yr x	0.00020 emitted after controls =	0.002 tons/yr

hot oil heater combustion: gas

P M:	0.014 tons/yr x	1.00000 emitted after controls =	0.014 tons/yr
P M-10:	0.057 tons/yr x	1.00000 emitted after controls =	0.057 tons/yr

hot oil heater combustion: #2 oil

P M:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr
P M-10:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr

hot oil heater combustion: butane

P M:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr
P M-10:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr

hot oil heater combustion: propane

P M:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr
P M-10:	0.000 tons/yr x	1.00000 emitted after controls =	0.000 tons/yr

dryer combustion: #4 oil

P M:	4.76 tons/yr x	0.00020 emitted after controls =	0.001 tons/yr
P M-10:	7.86 tons/yr x	0.00020 emitted after controls =	0.002 tons/yr

dryer combustion: waste oil

P M:	76.34 tons/yr x	0.00020 emitted after controls =	0.015 tons/yr
P M-10:	65.93 tons/yr x	0.00020 emitted after controls =	0.013 tons/yr

dryer combustion: butane

P M:	1.92 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	1.92 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

dryer combustion: propane

P M:	2.15 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.15 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

aggregate drying:

P M:	31536.00 tons/yr x	<u>0.00020</u> emitted after controls =	<u>6.307</u> tons/yr
P M-10:	4434.75 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.887</u> tons/yr

conveying/handling:

P M:	2.62 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.620</u> tons/yr
P M-10:	0.26 tons/yr x	<u>1.000</u> emitted after controls =	<u>0.262</u> tons/yr

screening

P M:	29.80 tons/yr x	<u>1.000</u> emitted after controls =	<u>29.802</u> tons/yr
P M-10:	2.98 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.980</u> tons/yr

unpaved roads:

P M:	103.83 tons/yr x	50.00% emitted after controls =	<u>51.914</u> tons/yr
P M-10:	22.05 tons/yr x	50.00% emitted after controls =	<u>11.026</u> tons/yr

storage:

P M:	0.559 tons/yr x	50.00% emitted after controls =	<u>0.279</u> tons/yr
P M-10:	0.196 tons/yr x	50.00% emitted after controls =	<u>0.098</u> tons/yr

Emissions after controls (combustion plus production) are as follows:

	Butane	Propane	Gas	#2 Oil	#4 Oil	Waste Oil	
P M:	90.94	90.94	90.94	90.94	90.94	90.95	tons/yr
P M-10:	15.31	15.31	15.31	15.31	15.31	15.32	tons/yr

II. Allowable Emissions

A. The following calculations determine compliance with NSPS Subpart I, which limits stack emissions from asphalt plants to 0.04 gr/dscf:

$$\frac{0.04 \text{ grains}}{\text{dscf}} \times \frac{65190.000 \text{ acfm}}{\text{year}} \times \frac{1}{7000 \text{ grains}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{66.810 \text{ tons}}{\text{yr}}$$

$\frac{460}{+} \frac{528}{275} \text{ Temp} \times \frac{100}{100} - 5\% \text{ moisture} *$

To meet NSPS Subpart I, the following value must be < amount calculated above

6.34 tons/yr

B. The following calculations determine the maximum sulfur content of distillate #2 fuel oil allowable by 326 IAC 7:

limit: 0.5 lbs/MMBtu

$$\frac{0.5 \text{ lbs/MMBtu} \times 138000.0 \text{ Btu/gal}}{69 \text{ lbs/1000gal}} = \frac{69.0 \text{ lbs/1000gal}}{0.486}$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7

and to limit SO₂ emissions to 99 tons per year or less.

C. The following calculations determine the maximum sulfur content of residual waste fuel oil allowable by 326-IAC 7:

limit: 1.6 lbs/MMBtu

$$\frac{1.6 \text{ lbs/MMBtu} \times 142000.000 \text{ Btu/gal}}{227.2 \text{ lbs/1000gal}} = \frac{227.2 \text{ lbs/1000gal}}{1.062}$$

(check burner type)

Sulfur content must be less than or equal to 1.062 % to comply with 326 IAC 7

and to limit SO₂ emissions to 99 tons per year or less.

D. The following calculations determine the maximum sulfur content of distillate #4 fuel oil allowable by 326-IAC 7:

limit: 0.5 lbs/MMBtu

$$\frac{0.5 \text{ lbs/MMBtu} \times 138000.000 \text{ Btu/gal}}{69 \text{ lbs/1000gal}} = \frac{69 \text{ lbs/1000gal}}{0.486}$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7

and to limit SO₂ emissions to 99 tons per year or less.

III. Limited Potential Emissions

FUEL USAGE LIMITATION: BASED ON NOx

FUEL USAGE LIMITATION FOR HOT OIL HEATER ALONE (OIL)

$$0.00 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 0.00 \frac{\text{lbs NOx}}{\text{year}}$$

$$0 \frac{\text{lbs NOx}}{\text{year}} / 20 \frac{\text{lbs NOx}}{\text{kgal}} = 0.00 \frac{\text{kgal}}{\text{year}}$$

$$0.00 \frac{\text{kgal}}{\text{year}} * \frac{98.5 \text{ tons/year}}{0 \text{ tons/year}} = 0.0 \frac{\text{gal fuel}}{\text{year}}$$

FUEL USAGE LIMITATION FOR BURNER (Gas)

$$68.94 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 137880 \frac{\text{lbs NOx}}{\text{year}}$$

$$137880 \frac{\text{lbs NOx}}{\text{year}} / 100.0 \frac{\text{lbs NOx}}{\text{MMcf}} = 1378.80 \frac{\text{MMcf}}{\text{year}}$$

$$1378.80 \frac{\text{MMcf}}{\text{year}} * \frac{98.5 \text{ tons/yr}}{68.94 \text{ tons/yr}} = 0.0 \frac{\text{MMcf}}{\text{year}} \text{ FESOP Limit}$$

FUEL USAGE LIMITATION FOR BURNER (#2 Oil)

$$99.90 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 199800.00 \frac{\text{lbs NOx}}{\text{year}}$$

$$199800.00 \frac{\text{lbs NOx}}{\text{year}} / 20 \frac{\text{lbs}}{1000 \text{ gal}} = 9990.00 \frac{\text{kgal}}{\text{year}}$$

$$9990.00 \frac{\text{kgal}}{\text{year}} * \frac{98.5 \text{ tons/yr}}{99.90 \text{ tons/yr}} = 9850.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit}$$

FUEL USAGE LIMITATION FOR BURNER (#4 Oil)

$$99.90 \frac{\text{tons NOx}}{\text{year}} * 2000 \frac{\text{lbs}}{\text{ton}} = 199800.00 \frac{\text{lbs NOx}}{\text{year}}$$

$$199800.00 \frac{\text{lbs NOx}}{\text{year}} / 20.0 \frac{\text{lbs}}{1000 \text{ gal}} = 9990.00 \frac{\text{kgal}}{\text{year}}$$

$$9990.00 \frac{\text{kgal}}{\text{year}} * \frac{98.5 \text{ tons/yr}}{99.90 \text{ tons/yr}} = 9850.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit}$$

FUEL USAGE LIMITATION FOR BURNER (Waste Oil)

$$\begin{array}{rclclcl} 77.68 \frac{\text{tons NOx}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 155360.00 \frac{\text{lbs NOx}}{\text{year}} \\ 155360.00 \frac{\text{lbs NOx}}{\text{year}} & / & 16.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9710.00 \frac{\text{kgal}}{\text{year}} \\ 9710.00 \frac{\text{kgal}}{\text{year}} & * & \frac{98.5 \text{ tons/yr}}{77.68 \text{ tons/yr}} & = & 0.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit} \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (butane)

$$\begin{array}{rclclcl} 141.11 \frac{\text{tons NOx}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 282216.00 \frac{\text{lbs NOx}}{\text{year}} \\ 282216.00 \frac{\text{lbs NOx}}{\text{year}} & / & 21.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 13438.86 \frac{\text{kgal}}{\text{year}} \\ 13438.86 \frac{\text{kgal}}{\text{year}} & * & \frac{98.5 \text{ tons/yr}}{141.11 \text{ tons/yr}} & = & 9381.0 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit} \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (propane)

$$\begin{array}{rclclcl} 143.16 \frac{\text{tons NOx}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 286314.00 \frac{\text{lbs NOx}}{\text{year}} \\ 286314.00 \frac{\text{lbs NOx}}{\text{year}} & / & 19.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 15069.16 \frac{\text{kgal}}{\text{year}} \\ 15069.16 \frac{\text{kgal}}{\text{year}} & * & \frac{98.5 \text{ tons/yr}}{143.16 \text{ tons/yr}} & = & 10368.4 \frac{\text{kgal}}{\text{year}} \text{ FESOP Limit} \end{array}$$

FUEL USAGE LIMITATION: BASED ON SO2**FUEL USAGE LIMITATION FOR HOT OIL HEATER ON OIL**

$$\begin{array}{rclclcl} 0.00 \frac{\text{tons SO2}}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 0 \frac{\text{lbs SO2}}{\text{year}} \\ 0 \frac{\text{lbs SO2}}{\text{year}} & / & 70.0 \frac{\text{lbs SO2}}{\text{kgal}} & = & 0.00 \frac{\text{kgal}}{\text{year}} \\ 0 \frac{\text{kgal}}{\text{year}} & * & \frac{99.9 \text{ tons/year}}{0 \text{ tons/year}} & = & 0.0 \frac{\text{gal fuel}}{\text{year}} \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (Gas)

$$\begin{array}{rclclcl}
 0.414 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 828.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 828.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 0.6 \frac{\text{lbs SO}_2}{\text{MMcf}} & = & 1380.00 \frac{\text{MMcf}}{\text{year}} \\
 1380.00 \frac{\text{MMcf}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{0.41 \text{ tons/yr}} & = & 0.0 \frac{\text{MMcf}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (#2 Oil)

$$\begin{array}{rclclcl}
 354.7 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 709394.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 709394.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 71.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9991464.7887 \frac{\text{gal}}{\text{year}} \\
 9991464.79 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{354.70 \text{ tons/yr}} & = & 2814084.5 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (#4 Oil)

$$\begin{array}{rclclcl}
 374.7 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 749362 \frac{\text{lbs SO}_2}{\text{year}} \\
 749362.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 75.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9991493.3333 \frac{\text{gal}}{\text{year}} \\
 9991493.33 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{374.68 \text{ tons/yr}} & = & 2664000.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (Waste Oil)

$$\begin{array}{rclclcl}
 728.3 \frac{\text{tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 1456504.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 1456504.00 \frac{\text{lbs SO}_2}{\text{year}} & / & 150.0 \frac{\text{lbs}}{1000 \text{ gal}} & = & 9710026.67 \frac{\text{gal}}{\text{year}} \\
 9710026.67 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{728.25 \text{ tons/yr}} & = & 1332000.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (propane)

$$\begin{array}{rclclcl}
 \frac{0.15 \text{ tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 302.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 \\
 \frac{302.00 \text{ lbs SO}_2}{\text{year}} & / & \frac{0.02 \text{ lbs}}{1000 \text{ gal}} & = & 15100000.00 \frac{\text{gal}}{\text{year}} \\
 \\
 15100000.00 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{0.00 \text{ tons/yr}} & = & 0.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

FUEL USAGE LIMITATION FOR BURNER (butane)

$$\begin{array}{rclclcl}
 \frac{0.121 \text{ tons SO}_2}{\text{year}} & * & 2000 \frac{\text{lbs}}{\text{ton}} & = & 242.00 \frac{\text{lbs SO}_2}{\text{year}} \\
 \\
 \frac{242.00 \text{ lbs SO}_2}{\text{year}} & / & \frac{0.02 \text{ lbs}}{1000 \text{ gal}} & = & 13444444.44 \frac{\text{gal}}{\text{year}} \\
 \\
 13444444.44 \frac{\text{gal}}{\text{year}} & * & \frac{99.9 \text{ tons/yr}}{0.000 \text{ tons/yr}} & = & 0.0 \frac{\text{gal}}{\text{year}} \text{ FESOP Limit}
 \end{array}$$

LIQUID BINDER USAGE LIMITATION: BASED ON VOC EMISSIONS FROM CUTBACK ASPHALT

Assume slow cure and 25% evaporative loss of diluent.

Percent diluent in liquid binder =
Average Density Diluent =8%
5.84 lbs/gal

Average Density of Asphalt Cement =

9.17 lbs/gal

The FESOP VOC emission limit of 100 tons per year minus the worst case sum of emissions from combustion and production = **95.00 tons/yr**

Limited tons of liquid binder = (limited VOC emission rate/25%)/density of diluent * 2,000 lbs/ton *(density of diluent + ((1 - %diluent)/%diluent) * density of asphalt cement) / 2000 lbs/ton)

LIQUID BINDER USAGE LIMITATION = 7242 tons/yr

Appendix A: Emission Calculations

Company Name: Rieth-Riley Construction Co., Inc.
Plant Location: 3425 O'Farrel Road, Lafayette, Indiana 47904
County: Tippecanoe
FESOP: F 157-14146
Plt. ID: 157-03286
Date: March 12, 2001
Permit Reviewer: Edward A. Longenberger

Plant 157-03286

I. Potential Emissions

A. Source emissions before controls

<div><div>A. Source Emissions before controls</div><div><div>Hot Oil Heater on Oil (oil/<100MMBTU/uncontrolled)</div><div><div>The following calculations determine the amount of emissions created by #2 & #1 distillate fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3</div><div><div>Pollutant: 0.000 MMBtu/hr * 8760 hrs/yr 138000.0 Btu/gal * 2000 lbs/ton</div><div><div><div>P M: 2.0 lbs/1000 gal = 0.000 tons/yr</div><div>PM-10: 3.3 lbs/1000 gal = 0.000 tons/yr</div><div>S O x: 71.0 lbs/1000 gal = 0.000 tons/yr</div><div>N O x: 20.0 lbs/1000 gal = 0.000 tons/yr</div><div>V O C: 0.34 lbs/1000 gal = 0.000 tons/yr</div><div>C O: 5.0 lbs/1000 gal = 0.000 tons/yr</div></div></div></div></div></div></div>	<div><div>Hot Oil Heater (butane)</div><div><div>The following calculations determine the amount of emissions created by butane gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div>0.000 MMBtu/hr * 8760 hrs/yr 102600.0 Btu/gal * 2000 lbs/ton</div><div><div><div>P M: 0.5 lbs/1000 gal = 0.000 tons/yr</div><div>PM-10: 0.5 lbs/1000 gal = 0.000 tons/yr</div><div>S O x: 0.02 lbs/1000 gal = 0.000 tons/yr</div><div>N O x: 15.0 lbs/1000 gal = 0.000 tons/yr</div><div>V O C: 0.60 lbs/1000 gal = 0.000 tons/yr</div><div>C O: 2.1 lbs/1000 gal = 0.000 tons/yr</div></div></div></div></div></div>
<div><div>Hot Oil Heater on Gas (gas/<100MMBTU/uncontrolled)</div><div><div>The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3</div><div><div>Pollutant: 0.000 MMBtu/hr * 8760 hrs/yr 1000 Btu/cf * 2000 lbs/ton</div><div><div><div>P M: 1.9 lbs/MMcf = 0.000 tons/yr</div><div>P M-10: 7.6 lbs/MMcf = 0.000 tons/yr</div><div>S O x: 0.6 lbs/MMcf = 0.000 tons/yr</div><div>N O x: 100.0 lbs/MMcf = 0.000 tons/yr</div><div>V O C: 5.5 lbs/MMcf = 0.000 tons/yr</div><div>C O: 84.0 lbs/MMcf = 0.000 tons/yr</div></div></div></div></div></div>	<div><div>Hot Oil Heater (propane)</div><div><div>The following calculations determine the amount of emissions created by propane gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42 Ch. 1.5, Table 1.5-1</div><div><div>0.800 MMBtu/hr * 8760 hrs/yr 91500.0 Btu/gal * 2000 lbs/ton</div><div><div><div>P M: 0.4 lbs/1000 gal = 0.015 tons/yr</div><div>PM-10: 0.4 lbs/1000 gal = 0.015 tons/yr</div><div>S O x: 0.02 lbs/1000 gal = 0.001 tons/yr</div><div>N O x: 14.0 lbs/1000 gal = 0.536 tons/yr</div><div>V O C: 1.90 lbs/1000 gal = 0.073 tons/yr</div><div>C O: 3.2 lbs/1000 gal = 0.123 tons/yr</div></div></div></div></div></div>

Dryer Burner (gas/<100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	<u>82.400 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf) = (tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.6857</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>2.743</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.217</u> tons/yr
N O x:	100.0 lbs/MMcf =	<u>36.0912</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>1.985</u> tons/yr
C O:	84.0 lbs/MMcf =	<u>30.317</u> tons/yr

Dryer Burner (gas/>100MMBTU/uncontrolled)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3

Pollutant:	<u>0.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf)(tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.000</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>0.000</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.000</u> tons/yr
N O x:	190.0 lbs/MMcf =	<u>0.00</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>0.000</u> tons/yr
C O:	84.0 lbs/MMcf =	<u>0.000</u> tons/yr

Post-NSPS = 190

Dryer Burner (gas/>100MMBTU/low nox)

The following calculations determine the amount of emissions created by natural gas combustion, based on 8760 hours of use, AP-42 Ch. 1.4, Tables 1.4-1, 1.4-2, 1.4-3 (low NOx burner = 140, flue gas recirculation = 100)

Pollutant:	<u>0.000 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/MMcf)(tons/yr)</u>
	1000 Btu/cf * 2000 lbs/ton	
P M:	1.9 lbs/MMcf =	<u>0.000</u> tons/yr
P M-10:	7.6 lbs/MMcf =	<u>0.000</u> tons/yr
S O x:	0.6 lbs/MMcf =	<u>0.000</u> tons/yr
N O x:	140.0 lbs/MMcf =	<u>0.000</u> tons/yr
V O C:	5.5 lbs/MMcf =	<u>0.000</u> tons/yr
C O:	84.0 lb/MMcf =	<u>0.000</u> tons/yr

Dryer Burner (#2 oil)

<100 MMBtu/hr

The following calculations determine the amount of emissions created by #2 & #1 distillate fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>82.4 MMBtu/hr * 8760 hrs/yr</u>	<u>* Ef (lbs/1000 gal) = (tons/yr)</u>
	138000.0 Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>5.231</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>8.631</u> tons/yr
S O x:	71.0 lbs/1000 gal =	<u>185.687</u> tons/yr
N O x:	20.0 lbs/1000 gal =	<u>52.306</u> tons/yr
V O C:	0.34 lbs/1000 gal =	<u>0.889</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>13.077</u> tons/yr

If Rating >100 mmB

N O x: **24.0**
V O C: **0.20**

Dryer Burner (#4 oil/ <100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.5 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>82.400</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>5.231</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>8.631</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>196.148</u> tons/yr
N O x:	20.0 lbs/1000 gal =	<u>52.306</u> tons/yr
V O C:	0.34 lbs/1000 gal =	<u>0.889</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>13.077</u> tons/yr

Dryer Burner (#4 oil/ >100MMBTU)

The following calculations determine the amount of emissions created by #4 distillate

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Tables 1.3-1, 1.3-2, 1.3-3

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>138000.0</u> Btu/gal * 2000 lbs/ton	
P M:	2.0 lbs/1000 gal =	<u>0.000</u> tons/yr
PM-10:	3.3 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	75.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	24.0 lbs/1000 gal =	<u>0.000</u> tons/yr
V O C:	0.20 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	5.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/ vaporizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 0.500 % sulfur, based on 8760 hours of use and AP-42, Chapter 1.11

<u>0.000</u>	% Ash
<u>0.000</u>	% Lead

Pollutant:	<u>0.0</u> MMBtu/hr * 8760 hrs/yr	* Ef (lbs/1000 gal) = (tons/yr)
	<u>0.0</u> Btu/gal * 2000 lbs/ton	
P M:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
P M-10:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr
S O x:	50.0 lbs/1000 gal =	<u>0.000</u> tons/yr
N O x:	11.0 lbs/1000 gal =	<u>0.000</u> tons/yr
VOC	1.0 lbs/1000 gal =	<u>0.000</u> tons/yr
C O:	1.7 lbs/1000 gal =	<u>0.000</u> tons/yr
Pb:	0.0 lbs/1000 gal =	<u>0.000</u> tons/yr

Dryer Burner (waste oil/atomizing burner)

The following calculations determine the amount of emissions created by waste

fuel oil @ 1.000 % sulfur, based on 8760 hours of use and AP-42 Chapter 1.110.500

% Ash

0.015

% Lead

Pollutant: 82.400 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
142000.000 Btu/gal * 2000 lbs/ton

P M:	33.0 lbs/1000 gal =	<u>83.874</u> tons/yr
P M-10:	28.5 lbs/1000 gal =	<u>72.437</u> tons/yr
S O x:	150.0 lbs/1000 gal =	<u>381.245</u> tons/yr
N O x:	16.0 lbs/1000 gal =	<u>40.666</u> tons/yr
VOC:	1.0 lbs/1000 gal =	<u>2.542</u> tons/yr
C O:	2.10 lbs/1000 gal =	<u>5.337</u> tons/yr
Pb:	0.75 lbs/1000 gal =	<u>1.906</u> tons/yr

Dryer Burner (butane)

The following calculations determine the amount of emissions created by butane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 82.400 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
102600.0 Btu/gal * 2000 lbs/ton

P M:	0.6 lbs/1000 gal =	<u>2.111</u> tons/yr
PM-10:	0.6 lbs/1000 gal =	<u>2.111</u> tons/yr
S O x:	0.02 lbs/1000 gal =	<u>0.063</u> tons/yr
N O x:	21.0 lbs/1000 gal =	<u>73.871</u> tons/yr
V O C:	0.26 lbs/1000 gal =	<u>0.915</u> tons/yr
C O:	3.6 lbs/1000 gal =	<u>12.664</u> tons/yr

Dryer Burner (propane)

The following calculations determine the amount of emissions created by propane

gas @ 0.20 grains sulfur per 100 cubic feet, based on 8760 hours of use and AP-42, Table 1.5-1

Pollutant: 82.400 MMBtu/hr * 8760 hrs/yr * Ef (lbs/1000 gal) = (tons/yr)
91500.0 Btu/gal * 2000 lbs/ton

P M:	0.6 lbs/1000 gal =	<u>2.367</u> tons/yr
PM-10:	0.6 lbs/1000 gal =	<u>2.367</u> tons/yr
S O x:	0.02 lbs/1000 gal =	<u>0.079</u> tons/yr
N O x:	19.0 lbs/1000 gal =	<u>74.943</u> tons/yr
V O C:	0.25 lbs/1000 gal =	<u>0.986</u> tons/yr
C O:	3.2 lbs/1000 gal =	<u>12.622</u> tons/yr

**** aggregate drying: drum-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and AP-42, Chapter 11.1, Table 11.1-3, rev. 12/00

P M:	28 lbs/ton x	<u>0.0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u>	tons/yr
		2000	lbs/ton			
P M-10:	6.5 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u>	tons/yr
		2000	lbs/ton			
Lead:	3.30E-06 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u>	tons/yr
		2000	lbs/ton			
HAPs:	0.0076 lbs/ton x	<u>0</u>	tons/hr x	8760 hrs/yr =	<u>0.000</u>	tons/yr
		2000	lbs/ton			

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** aggregate drying: batch-mix plant ****

The following calculations determine the amount of emissions created by aggregate drying, based on 8760 hours of use and EPA SCC #3-05-002-05:

P M:	32 lbs/ton x	<u>200.0</u>	tons/hr x	8760 hrs/yr =	<u>28032.0</u>	tons/yr
		2000	lbs/ton			
P M-10:	4.5 lbs/ton x	<u>200</u>	tons/hr x	8760 hrs/yr =	<u>3942.0</u>	tons/yr
		2000	lbs/ton			
Lead:	3.30E-06 lbs/ton x	<u>200</u>	tons/hr x	8760 hrs/yr =	<u>0.003</u>	tons/yr
		2000	lbs/ton			
HAPs:	0.0076 lbs/ton x	<u>200</u>	tons/hr x	8760 hrs/yr =	<u>6.658</u>	tons/yr
		2000	lbs/ton			

HAPs include benzene, ethylbenzene, formaldehyde, methyl chloroform, naphthalene, toluene, xylene; arsenic, cadmium, chromium, manganese, mercury, and nickel compounds.

**** conveying / handling ****

The following calculations determine the amount of emissions created by material handling of aggregate, based on 8760 hours of use and AP-42, Ch 11.19.2

$$E_f = .0032^* \frac{(U/5)^{1.3}}{(M/2)^{1.4}} * k = \underline{\underline{0.003}} \text{ lbs/ton}$$

where k= 1 (particle size multiplier)
U = 12 mph mean wind speed (worst case)
M = 5.0 % moisture

$$P \text{ M : } \underline{\underline{0.003}} \text{ lbs/ton x } \underline{\underline{190.00}} \text{ tons/hr x } 8760 \text{ hrs/yr} = \underline{\underline{2.304}} \text{ tons/yr}$$

2000 lbs/ton

$$P \text{ M-10: } 10\% \text{ of PM} = \underline{\underline{0.230}} \text{ tons/yr}$$

Screening PM: 190.00 tons/hr x 0.0315 lbs/ton / 2000 lbs/ton x 8760 hrs/yr = 26.214 tons/yr AP-42 Ch.11.19.2

$$P \text{ M-10: } 10\% \text{ of PM} = \underline{\underline{2.621}} \text{ tons/yr}$$

**** unpaved roads ****

The following calculations determine the amount of emissions created by vehicle traffic on unpaved roads, based on 8760 hours of use and AP-42, Ch 13.2.2.

A. Tri-axle Truck

<u>20.00</u> trips/hr x				
<u>0.12</u> miles/roundtrip x				
8760 hrs/yr =		<u>21724.8</u> miles per year		
For PM	For PM-10			
5.83	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$			
10	= 1.24 lb/mile			
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)			
0.5	s = 4.8 mean % silt content of unpaved roads			
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)			
23	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)			
0.2	W = 23 tons average vehicle weight			
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)			
10	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)			
	S = 10 miles/hr vehicle speed			
	5.83 lb/mi x 24440.4 mi/yr =	PM	<u>71.26</u> tons/yr	
	2000 lb/ton			
	1.24 lb/mi x 24440.4 mi/yr =	PM-10	<u>15.11</u> tons/yr	
	2000 lb/ton			

B. Front End Loader

<u>34.5</u> trips/hr x				
<u>0.056</u> miles/roundtrip x				
8760 hrs/yr =		<u>16924.3</u> miles per year		
For PM	For PM-10			
3.42	$E_f = \{k * [(s/12)^{0.8}] * [(W/3)^b] / [(Mdry/0.2)^c] * [(365-p)/365] * (S/15)$			
10	= 0.73 lb/mile			
4.8	where k = 2.6 (particle size multiplier for PM-10) (k=10 for PM-30 or TSP)			
0.5	s = 4.8 mean % silt content of unpaved roads			
0.4	b = 0.4 Constant for PM-10 (b = 0.5 for PM-30 or TSP)			
22	c = 0.3 Constant for PM-10 (c = 0.4 for PM-30 or TSP)			
0.2	W = 22 tons average vehicle weight			
125	Mdry = 0.2 surface material moisture content, % (default is 0.2 for dry conditions)			
6	p = 125 number of days with at least 0.254mm of precipitation (See Figure 13.2.2-1)			
	S = 6 miles/hr vehicle speed			
	3.42 lb/mi x 16924.32 mi/yr =	PM	<u>28.96</u> tons/yr	
	2000 lb/ton			
	0.73 lb/mi x 16924.32 mi/yr =	PM-10	<u>6.17</u> tons/yr	
	2000 lb/ton			

All Trucking Total PM: 100.22 tons/yr
 Total PM-10: 21.28 tons/yr

**** storage ****

The following calculations determine the amount of emissions created by wind erosion of storage stockpiles, based on 8760 hours of use and AP-42, Ch 11.2.3.

$$\begin{aligned}
 E_f &= 1.7 \cdot (s/1.5) \cdot (365-p)/235 \cdot (f/15) \\
 &= 1.74 \text{ lbs/acre/day for sand} \\
 &= 1.16 \text{ lbs/acre/day for stone} \\
 &= 1.16 \text{ lbs/acre/day for slag} \\
 &= 1.16 \text{ lbs/acre/day for gravel} \\
 &= 1.16 \text{ lbs/acre/day for RAP} \\
 \text{where } s &= 1.5 \% \text{ silt for sand} \\
 s &= 1.0 \% \text{ silt of stone} \\
 s &= 1.0 \% \text{ silt of slag} \\
 s &= 1.0 \% \text{ silt of gravel} \\
 s &= 1.0 \% \text{ silt for RAP} \\
 p &= 125 \text{ days of rain greater than or equal to 0.01 inches} \\
 f &= 15 \% \text{ of wind greater than or equal to 12 mph}
 \end{aligned}$$

$$\begin{aligned}
 E_p (\text{storage}) &= \frac{E_f \cdot sc \cdot (20 \text{ cuft/ton}) \cdot (365 \text{ days/yr})}{(2000 \text{ lbs/ton}) \cdot (43560 \text{ sqft/acre}) \cdot (25 \text{ ft})} \\
 &= 0.116 \text{ tons/yr for sand} \\
 &= 0.155 \text{ tons/yr for stone} \\
 &= 0.000 \text{ tons/yr for slag} \\
 &= 0.039 \text{ tons/yr for gravel} \\
 &= 0.000 \text{ tons/yr for RAP} \\
 \text{Total PM:} &= \underline{\underline{0.310 \text{ tons/yr}}}
 \end{aligned}$$

$$\begin{aligned}
 \text{where } sc &= 20,000 \text{ tons storage capacity for sand} \\
 sc &= 40,000 \text{ tons storage capacity for stone} \\
 sc &= 0,000 \text{ tons storage capacity for slag} \\
 sc &= 10,000 \text{ tons storage capacity for gravel} \\
 sc &= 0,000 \text{ tons storage capacity for RAP}
 \end{aligned}$$

$$\begin{aligned}
 \text{P M-10:} \quad 35\% \text{ of PM} &= 0.041 \text{ tons/yr for sand} \\
 35\% \text{ of PM} &= 0.054 \text{ tons/yr for stone} \\
 35\% \text{ of PM} &= 0.000 \text{ tons/yr for slag} \\
 35\% \text{ of PM} &= 0.014 \text{ tons/yr for gravel} \\
 35\% \text{ of PM} &= 0.000 \text{ tons/yr for RAP}
 \end{aligned}$$

$$\text{Total PM-10:} = \underline{\underline{0.109 \text{ tons/yr}}}$$

Emissions before controls (combustion plus production) are as follows:

natural gas		#2 oil		#4 oil		waste oil	
P M:	28162 tons/yr	P M:	28166 tons/yr	P M:	28166 tons/yr	P M:	28245 tons/yr
P M-10:	3969 tons/yr	P M-10:	3975 tons/yr	P M-10:	3975 tons/yr	P M-10:	4039 tons/yr
S O x:	0.22 tons/yr	S O x:	185.69 tons/yr	S O x:	196.15 tons/yr	S O x:	381.25 tons/yr
N O x:	36.63 tons/yr	N O x:	52.84 tons/yr	N O x:	52.84 tons/yr	N O x:	41.20 tons/yr
V O C:	2.06 tons/yr	V O C:	0.962 tons/yr	V O C:	0.962 tons/yr	V O C:	2.61 tons/yr
C O:	30.44 tons/yr	C O:	13.20 tons/yr	C O:	13.20 tons/yr	C O:	5.46 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	0.003 tons/yr	Lead:	1.909 tons/yr
HAPs:	6.66 tons/yr	HAPs:	6.66 tons/yr	HAPs:	6.658 tons/yr	HAPs:	6.658 tons/yr

butane		propane	
P M:	28163 tons/yr	P M:	28163 tons/yr
P M-10:	3968 tons/yr	P M-10:	3969 tons/yr
S O x:	0.06 tons/yr	S O x:	0.08 tons/yr
N O x:	74.41 tons/yr	N O x:	75.48 tons/yr
V O C:	0.99 tons/yr	V O C:	1.06 tons/yr
C O:	12.79 tons/yr	C O:	12.74 tons/yr
Lead:	0.003 tons/yr	Lead:	0.003 tons/yr
HAPs:	6.66 tons/yr	HAPs:	6.66 tons/yr

B. Source emissions after controls

dryer combustion: gas

P M:	0.69 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.74 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.001</u> tons/yr

dryer combustion: #2 oil

P M:	5.23 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.001</u> tons/yr
P M-10:	8.63 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.002</u> tons/yr

hot oil heater combustion: gas

P M:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr

hot oil heater combustion: #2 oil

P M:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr

hot oil heater combustion: butane

P M:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	0.000 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.000</u> tons/yr

hot oil heater combustion: propane

P M:	0.015 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.015</u> tons/yr
P M-10:	0.015 tons/yr x	<u>1.00000</u> emitted after controls =	<u>0.015</u> tons/yr

dryer combustion: #4 oil

P M:	5.23 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.001</u> tons/yr
P M-10:	8.63 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.002</u> tons/yr

dryer combustion: waste oil

P M:	83.87 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.017</u> tons/yr
P M-10:	72.44 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.014</u> tons/yr

dryer combustion: butane

P M:	2.11 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.11 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

dryer combustion: propane

P M:	2.37 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr
P M-10:	2.37 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.000</u> tons/yr

aggregate drying:

P M:	28032.00 tons/yr x	<u>0.00020</u> emitted after controls =	<u>5.606</u> tons/yr
P M-10:	3942.00 tons/yr x	<u>0.00020</u> emitted after controls =	<u>0.788</u> tons/yr

conveying/handling:

P M:	2.30 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.304</u> tons/yr
P M-10:	0.23 tons/yr x	<u>1.000</u> emitted after controls =	<u>0.230</u> tons/yr

screening

P M:	26.21 tons/yr x	<u>1.000</u> emitted after controls =	<u>26.214</u> tons/yr
P M-10:	2.62 tons/yr x	<u>1.000</u> emitted after controls =	<u>2.621</u> tons/yr

unpaved roads:

P M:	100.22 tons/yr x	50.00% emitted after controls =	<u>50.110</u> tons/yr
P M-10:	21.28 tons/yr x	50.00% emitted after controls =	<u>10.641</u> tons/yr

storage:

P M:	0.310 tons/yr x	50.00% emitted after controls =	<u>0.155</u> tons/yr
P M-10:	0.109 tons/yr x	50.00% emitted after controls =	<u>0.054</u> tons/yr

Emissions after controls (combustion plus production) are as follows:

	Butane	Propane	Gas	#2 Oil	#4 Oil	Waste Oil	
P M:	84.41	84.41	84.41	84.41	84.41	84.42	tons/yr
P M-10:	14.35	14.35	14.35	14.35	14.35	14.37	tons/yr

II. Allowable Emissions

A. The following calculations determine compliance with NSPS Subpart I, which limits stack emissions from asphalt plants to 0.04 gr/dscf:

$$\frac{0.04 \text{ grains}^*}{\text{dscf}} \times \frac{36290.000 \text{ acfm}^*}{460 + \frac{528}{275} \text{ Temp}} \times \frac{100}{100 - 5\% \text{ moisture}^*} = \frac{525600 \text{ minutes}^*}{\text{year}} \times \frac{1}{7000 \text{ grains}^*} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = 37.192 \text{ tons/yr}$$

To meet NSPS Subpart I, the following value must be < amount calculated above

5.64 tons/yr

B. The following calculations determine the maximum sulfur content of distillate #2 fuel oil allowable by 326 IAC 7:

limit: 0.5 lbs/MMBtu

$$0.5 \text{ lbs/MMBtu} \times \frac{138000.0 \text{ Btu/gal}}{69 \text{ lbs/1000gal}} = \frac{69.0 \text{ lbs/1000gal}}{0.486}$$

$$\frac{69 \text{ lbs/1000gal}}{0.486} = 142.0 \text{ lb/1000 gal} = 0.486$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7
and to limit SO₂ emissions to 99 tons per year or less.

C. The following calculations determine the maximum sulfur content of residual waste fuel oil allowable by 326-IAC 7:

limit: 1.6 lbs/MMBtu

$$1.6 \text{ lbs/MMBtu} \times \frac{142000.000 \text{ Btu/gal}}{227.2 \text{ lbs/1000gal}} = 227.2 \text{ lbs/1000gal}$$

$$\frac{227.2 \text{ lbs/1000gal}}{214.0 \text{ lbs/1000 gal}} = 1.062$$

(check burner type)

$$\frac{214.0 \text{ lbs/1000 gal}}{1.062} = 201.4 \text{ lb/1000 gal}$$

Sulfur content must be less than or equal to 1.062 % to comply with 326 IAC 7
and to limit SO₂ emissions to 99 tons per year or less.

D. The following calculations determine the maximum sulfur content of distillate #4 fuel oil allowable by 326-IAC 7:

limit: 0.5 lbs/MMBtu

$$0.5 \text{ lbs/MMBtu} \times \frac{138000.000 \text{ Btu/gal}}{69 \text{ lbs/1000gal}} = 69 \text{ lbs/1000gal}$$

$$\frac{69 \text{ lbs/1000gal}}{142.0 \text{ lbs/1000 gal}} = 0.486$$

Sulfur content must be less than or equal to 0.486 % to comply with 326 IAC 7
and to limit SO₂ emissions to 99 tons per year or less.